YOUR . . CHILD'S HEALTH

BY

JOHN GRIMSHAW,

M.D., B.S. (Lond.), D.P.H. (Camb.), etc.

With an Introduction by

SIR JAMES BARR.

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YOUR CHILD'S HEALTH

Medical Notes for Mothers and Teachers, School Nurses and Health Visitors

BY

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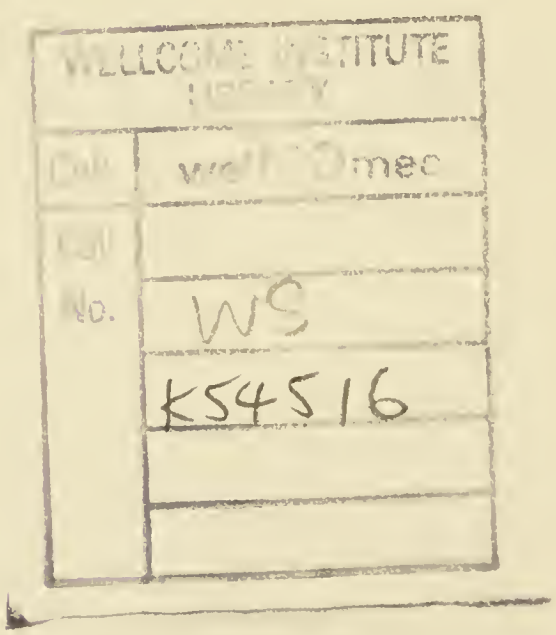
To the Memory

of

My Mother.



INTRODUCTION.

Dr. Grimshaw has asked me to write a short introduction to his work, and having perused the book I have much pleasure in complying with his request. There is the broad question to be considered as to how far the public can be advantageously recommended to study medical works. There can be no doubt that a little knowledge is a dangerous thing, especially in its application, but in no part of Dr. Grimshaw's work is the amateur advised to trifle with his own health or that of his friends; the danger signals are clearly pointed out so that the lay person may perceive the necessity of seeking medical advice. Dr. Grimshaw gives advice and instruction which can be properly carried out by the individual, and leaves the medical adviser supreme in his own province.

My own conviction is that the medicine of the future will be preventive medicine, not only in respect to diseases as they affect the community, but the individual will consider the preservation of health of even more importance than the treatment of disease. It is the duty of the State to prevent propagation of the unfit, and individuals should be taught to recognise their responsibility in rearing up children who would have reason to bless rather than curse them. There are thousands brought into the world every year who only owe to their parents the questionable advantage of a miserable existence. It is not merely the diminishing birth-rate which we have got to deplore but the insane propagation of the mentally and physically unfit. We want healthy, vigorous manhood and womanhood; we want men and women who will hold their own in the battle of life with any other nation; we want a nation of stalwarts. The health of a nation is its most valuable asset, and if this nation is to maintain its prestige against the enterprising foreigner we must raise up an intellectual and vigorous race.

As a nation it behoves us to take steps that our citizens do not undertake child-rearing in the irresponsible spirit of pastime.

The nation should spend money freely on the mothers and children whose lives and health are the most valuable assets of the nation, and every possible care should be taken to promote the health and physical development of the rising generation. Both the State and the individual should recognise the rights of the unborn. The glory and pride of manhood and womanhood should be the raising up of a sound, healthy family, and the study of such a work as this will help parents to preserve the health of their children and prevent them from being seriously afflicted with disease.

Dr. Grimshaw strongly insists on healthy environment; children must be reared and developed in healthy surroundings. If the instructions and advice which Dr. Grimshaw gives were carefully followed there would be a great falling off in the infantile death-rate, and this would also mean a great improvement in the general health of the young.

"In these notes I have tried to provide mothers seeking instruction with many helpful hints; I have sought to satisfy the demands of teachers with appetites for medical knowledge stimulated by the Act enforcing medical inspection of school children; I have endeavoured to cater for the wants of school nurses and health visitors acting as carriers of tabloids of advice to the homes of the needy.

I have been privileged to prepare medical students for their final examinations, and have enjoyed the opportunity of taking a part in the instruction and training of health visitors. This compilation is the pen-product of my deep interest in medico-educational work."

In my opinion Dr. Grimshaw has performed his self-imposed task in an admirable manner.

This work will be found to contain an enormous amount of information in a comparatively small space, and although the condensation into notes has necessarily given rise to a rather cramped style of diction, its practical utility will be found to far outweigh any literary defect.

I heartily commend this book, and congratulate Dr. Grimshaw on the spirit of help with which his popular writings are imbued—a spirit which adorns so many members of our profession, and which Coleridge has finely expressed in these lines:—

"So many are
The sufferings which no human aid can reach
It needs must be a duty doubly sweet
To heal the few we can."

JAMES BARR.

Liverpool, July, 1908.

CONTENTS.

Errata—Delete "certain" pp. 9, 15. The writer would value any suggestions for the improvement of this work, which has been prepared amid the many interruptions of private and hospital practice.

DISEASES OF CHILDREN.

"Wisdom is the principal thing; therefore get wisdom: and with all thy getting get understanding."

Leaving aside infectious diseases it will be found that most children's ailments can be grouped in relation to the three principal needs of physical life:—**Fresh Air, Food,** and **Rest,** the sources of supply to the breathing apparatus, the digestive system, and the brain.

With regard to the origin of affections of the organs of respiration, there are many wrong impressions and superstitions. As a rule, colds have nothing to do with "taking cold." It is either a case of simple infection, or the infliction of "coddling" and vitiated air. We live in a climate made up of an ever-changing medley of weather samples; we cannot keep delicate children out of the way of bad weather, we *can*, however, brace them so as to become more or less weather-proof. Winter coughs, asthma, even adenoid growths are largely a question of low general vitality, and the mother instead of doctoring the affected part with advertisers' nostrums and the ubiquitous camphorated oil, would be wiser in trying to make the whole body vigorous and hardy, and the over-sensitive parts more germ-resistant by the adoption of saner methods of hygienic living.

Digestive ailments are at the bottom of most of the feverish attacks which prevail in the nursery, and provoke fears of measles or scarlet fever, or even of an attack of appendicitis with its horrors of attendant operation! Yet the chances are the child has simply been upset by wrong feeding, and that as soon as the irritant is expelled by mouth or bowels, or by both, a rapid improvement will take place, *provided* food is withheld, and bland drinks are given to wash out of the system the accumulated poison. In the first few weeks of life almost every ailment should be looked at from the point of dieting; and although serious disease may account for vomiting, constipation, diarrhœa, and wasting, yet it happens that judicious starvation, combined with a grey powder or dose of castor oil, will be more often demanded than the diagnostic acumen of the physician or the operative skill of the surgeon!

The need for rest in the child's life is frequently over-looked. "The intense vitality of a growing child calls for long periods of repair, and a day is a very long time to live through for a small child." Dr. Warner's fatigue tests and nerve-signs should be widely known, and signs of nerve strain should be recognised early and remedied without delay. Sleeplessness is often a trouble of nervous children, and a hot-water bottle to cold feet is a simple remedy for this. It has been said that every neurotic child—commonly the product of neurotic parents—is a potential neurasthenic of one extreme type or another. By judicious management, much can be done to save these children from a fate which is ever dodging their footsteps. Ill-health may be averted by mental as much as by medical therapeutics. "Hence our professional armamentarium is no longer completed by a set of infallible prescriptions for coughs, worms, stomach ache and fits."

Great mischief can be done by over-zealous nurses. Unless care is exercised, mouth-washing of healthy infants simply serves to carry infection and to inflict injury. Tooth-brushes and their like must be a great source of infection if carelessly used; and the bronchitis kettle has been so abused that it has been called a "murderous appliance" by an eminent physician (Sir James Barr). Mistakes innumerable are made when beneficent Nature is supplanted by a senseless Art.

INTRODUCTORY—I. Choice of House; Hygiene of the Home.

In the rearing of healthy children it is an essential that the conditions of home life should be sanitary. You "cannot get healthy brains (or bodies) to grow on unhealthy soil." The care or neglect of house sanitation often turns the balance in favour of health or disease. For the malevolent germ thrives best where insanitary conditions prevail; dirt and disease usually accompany one another. The preventable class of diseases like consumption, diarrhœa, and typhoid fever; the infectious group of diseases like diphtheria and scarlet fever; the catarrhal set of diseases like colds, bronchitis and rheumatism, which are caused mostly by draught, damp air, wet clothes, and damp dwellings; septic diseases like sore throat, erysipelas, blood poisoning;—all these, and other diseases are more or less avoidable, and modified in their course, results, or spread by the state of the house and its surroundings. Most of us are compelled to live in a particular locality; few of us are compelled to live in a particular **house.** Although we may have to take the site, soil, water, and houses of that locality as we find them, knowledge should direct us to a rational choice; **personal supervision** should lead to the discovery and remedy of defects, and the maintenance of sanitary order. The home is the joint sphere of man and woman.

The **house** should have a southerly aspect, and the principal rooms should face south and west. The back and front should be open. A garden is an advantage. A *sunny aspect* is a great preventive of illness. Sunlight rapidly kills the germs of consumption and typhoid &c.; pure air and sunlight are the most powerful disinfectants. Without sunlight health is impossible in man. Sunlight is the best germ killer and man vitalizer! Back to back houses, dark houses, dark alleys, cellars, &c., have evil effects on health. All windows should be made to open, and each room should have a fireplace with a chimney which should never be closed. The advantages of thorough ventilation are many. Darkness and bad air breed disease; sunshine and fresh air bring health.

The house should be perfectly *dry*. Damp should neither rise in the walls nor come through them. The roof should be sound, and the gutters and rain pipes clear. The basement should be examined for dampness; this may be due to dampness of soil, faulty construction, leaky drain or rain pipe, flooding by sewage, soaking of slop-water thrown out near the house by careless domestics.

The **drainage** should be in order. No one should go into a house without having all the traps and drains examined by a *competent* man. The **soil pipe** should be placed outside the house, and should be continued upwards (as a ventilating shaft) to such a position and height as to afford a safe *outlet* for sewer gas. All **waste pipes** from sinks, baths, etc., should be trapped and discharge in the open air over a gulley. The **overflow pipe** from any cistern should discharge in the open air and not into a drain. **Rain pipes** should be efficient and open over gullies, and have no direct communication with the house drains. **No drain inlet**, except that necessary for the w.c., should be permitted within the building. The principal drainage from the house should be disconnected from the sewer at a point well away from the house, and a shaft from the drain should be placed here to provide an *inlet* for the passage of a constant current of fresh air through the entire length of house drain. The object of this complete disconnection of house from house drain, and house drain from sewer, is to prevent sewer gas entering the house and infecting or poisoning the occupiers. It is obvious that the traps (with their water seal) should be kept efficient by periodic cleaning and flushing, and that the drains should not be blocked by improper things being put down the closet, etc. If the drains are arranged on this plan, sewer gas or foul smells detected inside the house suggest a leaky pipe or drain. Leaky drains outside the house may foul the soil, and lead to the escape of offensive gases from the basement. Do not try to disguise stinks by deodorisers; search for the cause of the

stink. **Note** that a loose joint, a leaky pipe, a defective trap, or an inefficient ventilator may mean to the household an indefinite amount of sickness and possible mortality.

The **dustbin** should be kept covered and emptied frequently. All vegetable and animal refuse should be burnt each day on the kitchen fire. **Cesspools** are insanitary; they often prove a nuisance and a danger to health. Where they exist they ought to be constructed in a proper manner, and as far as practicable from the house or any source of water supply. No fixed **ashpit** should be allowed in towns.

The **closet** or **privy** should be kept in good sanitary condition. It will be advisable to see that it is not blocked, that it is flushed regularly, that floor and seat are kept clean, that its walls are limewashed (or suitably coated), and that it be efficiently and constantly ventilated.

The **larder** should be kept clean, cool, and well ventilated. Dust should be excluded. It should have no relation to drains or drain traps; its structure and sanitation should be as perfect as possible. If there is a meat safe it should have perforated zinc sides, and be placed in as much cool air and as little dust as possible. Nothing assists the decomposition of animal foods so much as damp heat. The child is particularly susceptible to disease from dirty foods and tainted meats. The **scullery** sink and waste pipe should receive solicitous attention. It should not be used for the storage of solid refuse; the trap should be kept quite clear, and the waste pipe *must* be disconnected from the drain as described. Water is plentiful in most places, soap is cheap, and so are scrubbing brushes and floor cloths, there need therefore be no practical difficulty in keeping **kitchen** floors, &c., clean. The walls and ceilings of **cellars**, &c., ought to be limewashed once in six months. It should not be forgotten that the *home* is the tenant's whilst the *house* is the landlord's.

The **water supply** should be good. Many diseases are water-borne *e.g.*, typhoid. In the country the dangers from sewage pollution of shallow well water should be borne in mind. If drinking water is stored in cisterns these should be made of slate or galvanised iron, and on no account of lead for certain fear of lead poisoning. They should be kept covered in a clean, well ventilated, accessible place, and should have no connection with w.c. or drain. It is important that they be emptied and scrubbed at least once a quarter. A good water is clear, colourless, tasteless, and inodorous. If it is of suspicious quality a report should be sent to the health authority, so that, if necessary, an analysis of it may be made. The only satisfactory filter is the Pasteur-Chamberland. The boiling of water kills infection in it. This may be necessary.

With regard to **decoration**. Painted (preferably varnished) or distempered walls are best. Flock wall papers should not be used, for they may contain poisonous stuff like arsenic; they collect dust and dirt, and cannot be cleaned. Disease lurks in darkness and dust; dust is an infection carrier. Old papers should be stripped off before putting on new. Insects and filth collect between the rotting layers of hidden paper!

The simpler the **furniture** the better. In a child's **bedroom** it should be only what is absolutely necessary, of simple description, easily moved, and easily cleaned by wiping or washing. Light, cheap, washable, muslin window curtains are most sanitary. Carpets should not extend over the whole room; strips which can be easily removed for cleaning are best. All bed-hangings, curtains, carpets, and clothes occupy space that had better be filled with air, make the room "fusty," help to collect dust and dirt, and moreover they harbour undesirable "things"! Single iron bedsteads should be used; mattresses are better than feather beds; horsehair is the best material for stuffing; there is danger in cheap stuffing. Fresh air, plenty of light, no curtains, paucity of carpets, good water supply, and sanitary conveniences close at hand,—are all **nursery** necessities. Servants are careless—soiled linen and excreta call for immediate removal. All rooms should be tidied and cleaned once a day, and "turned out" once a week.

"You should make it your business to know the construction of all the drainage connected with your dwelling; the trapping, ventilation, connections and overflow of every drain you possess; it is easily done, and good health is not to be secured if you are being constantly undermined by drain poison. When you have done this thoroughly, play with disinfectants if you will; otherwise do not obscure smells that ought to be a warning and a guide."

II. Personal Hygiene; The Medical Needs of the Child.

Herbert Spencer's dictum was—"To be a good animal is the first requisite to success in life, and to be a nation of good animals is the first condition of national prosperity." The qualities of true citizenship are self-respect, and clean, healthy, sensible living. By neglecting the rules of health, many diseases are contracted; by defying the laws of life, much suffering is entailed.

The State now recognises that the care of the child is of prime importance; that the health of the people is the primary care of the nation. It is evident that the best educational results cannot be obtained if the child be in indifferent health, or if the avenues of mind are blocked by some defect in the sense organs. It is admitted that to obtain normal development of mind and body you must comply with certain physiological laws which demand (1) the maintenance of healthy bodily surroundings, and (2) the supervision of mental and physical stresses. Preventable sufferings *were* inflicted on the child the victim of certain diseases or educational intoxications; the child *was* punished for faults originating in physical defects which should rather have been made the subject of medical inquiry; the child *was* heavily handicapped in the educational race by its impaired perception and damaged frame. The teacher suffered in his turn through officials forgetting the maxim that a dull child is a wise man's problem, and wasted his energy in teaching children with brains as blurred as their vision, and with wits as dull as their hearing.

But medical inspection of school children is not only concerned with the prevention of disease, and the early detection of disease or obstructive disabilities; it is the initial step in a great scheme of national progress and educational reform. It is concerned with physical education, and with exercises devised as an antidote to the demands made by modern education on the mental faculties; the study of mental fatigue, and the nervous and moral derangements of the school child; the scientific supervision of school methods, and special educational methods for teaching abnormal children of the many different types, *viz.*, the physically and mentally defective—the lame and the maimed, those who have been hard hit by the wild firing of our iniquitous social system, or having escaped the "slaughter of the innocents," have fallen by life's wayside to become hardened unemployables, casual mothers, depraved criminals, or social inefficients.

Of the total number of men passing through the Army Doctor's hands 33 per cent. are rejected. Is a man who is adjudged unfit for the defence of his Country any the more fit for the Industrial life? May not the ranks of pauperism and crime be recruited from these unfit members of Society? May not the cruel and drunken mother, the culpably neglectful mother, be similarly the degenerate victims in mind, body, and soul of a preventable or remediable disease, or be cursed by an heredity whose tide should be dammed, or stream diverted, by medical science and social legislation?

For the tree inclines as the twig is bent! The fate of a child is the work of its parents.

The medical needs of the child are concerned with:—The teaching of school hygiene to the teacher; the teaching of the gospel of domestic hygiene to the child; the instruction of parents with regard to the rearing of children, and the medical care of the child.

The manner in which these new duties are discharged is of great importance not only to the Child, but to the State.

III. Facts and Figures to be Noted.

"Infant life is dependent upon the mother from *nine months before birth* until nine months after birth." This is a physiological **law** which should not be violated. **One-quarter** of the total **deaths** of infants occur within the **first month.** The mother has a duty to discharge to her child *before the child is born.* The child requires most care during the first month of its life.

The natural food of the infant is its mother's milk. **Do not be deceived—no other food** is "just as good." It cannot be urged too strongly that a healthy mother should, whenever possible, suckle her child, in part, if not altogether. That a mother should be able and willing to do this is a matter of supreme **importance** for **herself,** the **child,** and the **nation.**

Many a mother might be enabled to nurse her child with profit and success if she only sought timely medical advice for herself or child, or were granted some **municipal** or **state aid.**

"Mixed feeding" is not injurious; a little loaf is better than no bread! Do not forget that the **bottle brings trouble** for the **mother** and **suffering** for the **child.** For the breast-fed child is —as a rule—stronger, ruddier, brighter, healthier in every way; suffers less from colic, vomiting, diarrhœa, rickets, fits, and all other infantile disorders. **All diseases of baby are worse and more fatal when it is hand-fed.** Many children are injured for life by faulty upbringing and artificial feeding.

Thus the chances of a hand-fed baby reaching the age of one year are much less (one-third) than those of a child nursed by a healthy mother. About **one-fourth** of the **total** deaths are in infants (mostly **hand-fed**) under **one year** of age. Of every seven children born one dies before the end of a year. Under five years of age the death-rate is much higher. The mortality is double in illegitimate children. This means a fearful wastage in child life.

120,000 Children die every year in England and Wales under twelve months of age, whilst **thousands more live on in misery and pain,** owing to parental ignorance about the laws of hygiene and diet.

☞ *Parental ignorance is largely responsible for this.* Municipal and Education Authorities are largely responsible for parental ignorance, by neglecting to provide home instruction or school teaching on "How to live," and "How to rear the child."

This **cruel sacrifice** of **babies** would largely be **prevented** were mothers instructed by medical men, and assisted by "health visitors" in their homes; or were babies provided with **proper milk,** and regularly **inspected** and weighed by medical men at "schools for mothers" or "**milk dispensaries.**"

Nobody can calculate the extent to which our budding manhood and womanhood are handicapped for life, mentally and physically, by scant or **improper** feeding at vital crises in their upbringing. As prevention is better than cure, a knowledge of the right selection and proper preparation of food is of vital interest to all classes of Society, for a deficient supply of materials to form muscles, bones, teeth, brains and nerves is **most injurious to the health, stamina and welfare of the rising generation.**

THE HEALTH OF THE EXPECTANT MOTHER.

The ovum (or egg) is simply a cell in an organ (the ovary) of the mother's body. In the germinal period of the life before birth the relations between the mother and the future child are those which exist between the whole body and one of its parts. When the ovum is impregnated by the male seed the influence of the father comes into play. "The germ is now the meeting place of two streams of ancestral tendencies"; the child is thus the slave of heredity and its environment; the new life cannot help but be influenced by the state of health of its parents—in particular of its mother. For the human mother has everything to do for her offspring; to supply it with food and oxygen; to clear away its waste products (excretions); to keep it warm; to protect it; and above all "to provide a future private dairy for it"! The care of the child, therefore, must involve the care of the mother during the first 9 months of its life; the quality of the mother's blood must affect that of her unborn child; the baby's well-being is inseparable from its mother's, although, as regards nourishment, the fœtus seems sometimes to be the preferred part.

Unfortunately factors may be at work which cause babies to be born before full time, and to die soon after birth; or full-time infants to be born so feeble as to live only a few weeks. "All the organs of the body of a man may be healthy save one (*e.g.*, the lungs), and all the functions of the body may be perfectly performed save one (*e.g.*, procreating); so in the process of child-bearing a woman may fail in one part, and that part be the bearing of healthy children . . . *If it can ever be discovered how the health of the unborn may be influenced for good, by the treatment we can apply to the mother, the first step in the effective prevention of disease and deformity will have been taken.*" *(Ballantyne.)* Meanwhile in this respect it is obvious that the physician is mainly concerned with the health of the mother; many social reformers and charitable agencies are at work to support his efforts in this direction.

Pregnant women need only obey the ordinary laws of healthy living. Nature imposes an extra strain on the organism; this strain should be met in a sensible and intelligent manner. Provided the habits of the woman were governed by the laws of hygiene before pregnancy, they can continue much the same when she is carrying her child; if these laws were broken before marriage, for the sake of mother and child they should be repaired now.

A sufficient supply of wholesome, nourishing and easily digested FOOD is desirable. There is no need to eat to excess, or to eat anything particular. Most women (like men) take enough to leave a sufficient margin; provided certain articles, perhaps favoured by the expectant mother, are not injurious or disgusting, they may be allowed. The English poor *must* be taught how to feed; at present they are—dietetically speaking—foolish and perverted. Poverty is not a sufficient excuse; laziness, thriftlessness, and unsexly ignorance want banning from many miserable homes. The stew-pot should be reinstated on the hob, and tinned stuffs and pennyworths of "ready-cooked" should be tabooed. Cocoa and milk should replace beer and tea.

EXERCISE should continue to be taken though not in excess or injurious forms. Working-class mothers get plenty of exercise indoors, but they often do not get enough *air*. Exercise short of fatigue, in the open air, strengthens the muscles, and promotes respiration. In this way parturition—largely a muscular act—is rendered easier, and the baby is stronger for its more abundant feeds of life-giving oxygen, and its blood purer by the internal ventilation ("tissue respiration") thus secured it. Lifting of heavy weights, acrobatic feats at times of cleaning, indeed every kind of forceful strain or upward stretch should be avoided. Well-ventilated rooms ought to be occupied both day and night, and crowded gatherings ought to be avoided whatever be their nature. Bathing is, of course, to be continued, but there is no need to commence new kinds of it, such as sea-bathing.

The pregnant woman should be shielded from morbid sensations, evil influences, or unpleasant sights, and relieved of depressing forebodings as to the state of the unborn infant. The child should be stamped by maternal influences of the highest order. The mother of Ruskin is a worthy example to follow.

The DRESS worn ought to bring no pressure to bear upon the upper part of the growing uterus (womb). The stays should not press upon the nipples, and should be worn wide and soft. The modern type of corset must be discarded. An abdominal belt may be useful in giving support from below upwards. Garters encourage varicose veins and swollen feet to which every pregnant woman is prone in the later months. All tight, vein-constricting bands should therefore be removed, and rest taken with the feet up at convenient moments. **Note** that swelling of the legs *may* also indicate the dropsy which is a sign of heart disease or serious kidney mischief. As the timely recognition of kidney disease is of vital importance to mother and child, medical advice should be at once sought when the legs pit on pressure from the finger, especially if there be swelling in other parts, *e.g.*, eyelids, back of hands, or twitchings of the face or other muscles suggestive of fits.

DRUGS must be avoided as far as possible; certain diseases, however, demand specific and skilful treatment.* The pregnant woman should protect herself from infectious fevers; and in the presence of an epidemic of smallpox, she ought to be revaccinated for the sake of herself and her unborn child. She ought to be protected by law from trades, such as typefounding, with their risks of lead poisoning and consequent danger of abortion, etc.

Anæmia should be corrected, liver and stomach disorders remedied, and constipation overcome. Women who lead sedentary lives suffer from CONSTIPATION. This is an evil which demands attention, partly because it occasions pressure and congestion, and therefore piles, but also because it leads to impurity of the mother's blood, and ill-health to herself and her charge. Stewed fruit is good (especially prunes), figs, bananas, baked apples, orange juice; oatmeal porridge, brown bread, vegetable stews and broths. The cheapest purgative that can be recommended is an infusion of senna pods (8 more or less) in half a tumblerful of water; infuse overnight, sweeten to taste, or flavour with

*For example, Syphilis.

raisins, strain, and drink early in the morning. Take as required. Avoid causing a DIARRHŒA, for this has evils and dangers of its own. *Saline* aperients, *e.g.*, salts, are bad for the milk-supply. Avoid all patent pills or mixtures which may contain harmful ingredients. Piles are best treated by securing a regular action of the bowels, by bathing with hot water night and morning, and by using gall and opium ointment.

During pregnancy the nipples should be bathed every night and morning, especially during the later weeks of a *first* case. If they are small and flat, attempts should be made to improve them by pulling them out with the finger and thumb anointed with equal parts of methylated spirits and olive oil. Cracked nipples are painful, and may cause an abscess of breast.

If the slightest signs of *deformity* are evident a doctor should be consulted, for in the interests of mother and child any contraction of the pelvis (hip bones) which obstructs labour should be recognised as early as possible. A contracted pelvis is often the result of rickets in infancy; a mother should, therefore, remember the possible far-reaching consequences of her little girl's illnesses.

If there has been any inflammation of the parts causing a discharge, it is *absolutely necessary* that steps should be taken to remedy it before the birth of the child. The danger of the child's eyes getting infected from such discharge is so great, and the risk of the child being blinded so horribly near, that every expectant mother and midwife should digest these words of Dr. Horrocks "On the instruction of midwives":—

"When the child is washed, extreme care must be taken that nothing gets between the eyelids and into the eye that might be injurious. The eyelids must be wiped carefully with some aseptic material, such as sterilized gauze. There is no objection to wiping them with swabs of cotton wool wrung out in warm boric acid lotion or salt and water, 2 teaspoonfuls to 1 pint. . . What should be done is to find out if the mother has any yellow or green discharge from the vagina, or if she has had such a discharge recently, whether her water scalds her, whether the skin about the vulva and neighbouring parts of the thighs is reddened, particularly whether any pus can be squeezed from the urethra. If none of these things are found, then it is to be assumed that the mother is healthy and the child's eyes are to be left alone accordingly. But if there is gonorrhœa, or a vaginitis, or a purulent discharge, or a well-grounded suspicion of these things, then a very active treatment to try and save the child from ophthalmia must be adopted." A blind child may have cause to curse a bad father.

The high Infantile Mortality in town-life is largely due to *poverty*. Poverty leads to underfeeding, overcrowding, to lack of sanitation, to women's labour, to artificial feeding, to alcoholism, to ignorance, carelessness—all of which have a direct bearing on the life and well-being of the child. But the high mortality of babies is not always due to poverty or drink. The problem is a complicated one.

The personal factor demands a careful study. The intelligence of the mother plays an important part; this is innate; the understanding acquired by education is but a poor substitute. No amount of culture can replace biological fitness. Mothers living under similar conditions show vastly different results in child-rearing and home-life.

The problem involves the choice of a wife, the raising of man's ideal, the detention of those unfit for parentage, the character training of young people to preserve a truer perspective of life.

INSTRUCTIONS ON THE FEEDING OF THE CHILD.

Breast Feeding.—If the mother is healthy, and has plenty of breast-milk, the child should not have any other food whatever until it is seven months old. During the first month or six weeks the child should be suckled every two hours in the day, and every four hours at night; after this age the interval may be gradually lengthened to three hours in the day and six hours at night. The child should be put to the breast at the same time every day, and should not be allowed to remain at the breast more than 15 minutes at a time. Let the baby sleep from 11 at night to 5 in the morning without a meal. A child should not be wakened for feeding. Crying is *no reason* for putting a child to the breast. Too frequent suckling produces vomiting, wind, or colic (indigestion); this is why OVER-FED babies are FRETFUL. Less milk at longer intervals will often put them right.

Mothers should take an abundance of good plain food while suckling. Nutritious and cheap foods are flour (as puddings, biscuits, bread), oat-meal as cakes, herrings, milk, peas and beans. Eggs are excellent food but dearer. The cheaper sorts of meat should be used to some extent. Peas and beans should be well soaked in cold water, and used with fat such as butter, dripping, margarine, lard. Wash and dry the nipples after each feed, and if sore or "cracked" paint with hazeline.

If the mother has not sufficient milk, she should take a cupful of hot milk or milk gruel half-an-hour before nursing. Stout (or other stimulant) is **not** necessary—a nursing mother should **avoid intoxicants,** but drink plenty of milk instead. *Be temperate in all things.*

At the age of SEVEN MONTHS, in addition to the breast milk, the child may get one or two meals a day of cow's milk, which, to begin with, should be slightly diluted with water. "Mixed" feeding is not injurious, and should be tried when baby *ceases to gain* properly in weight.

Weaning should be gradual. Never wean during July, August, or September, if you can avoid it. If you do there is a certain **danger** of baby dying from summer diarrhœa. The child should, as a rule, be completely removed from the breast by the age of NINE MONTHS. Suckling beyond this time is most **injurious to mother and child,** and it is untrue that the mother will not become pregnant while she is suckling. Take care that the baby has plenty of cow's milk after weaning; a healthy weaned child of nine months old needs at least 1½ pints of good scalded milk a day. By the time it has four teeth it may have its milk thickened with baked flour, rusks, or a good patent food, *e.g.*, Mellin's. On no account give any sort of bread food before the teeth are through, as it causes indigestion and **convulsions.**

Note.—A child should have *no other food* than milk till the **age of nine months,** nor should babies ever get tea, stimulants, &c., "teething powders" or "soothing syrups." The child should be washed all over in a warm bath once a day, and should be taken out into the fresh air every day, forenoon and afternoon, when the weather is fine. Children who are improperly fed or cared for get DIARRHŒA, SKIN ERUPTIONS, RUPTURE or RICKETS, CONVULSIONS. If there be constipation, diarrhœa or sickness, or if child "wastes away" or does not thrive properly, take it without undue delay to a doctor for further advice. **Delay is often dangerous.**

Hand Feeding.—If the mother is unable to suckle, the child should be fed on **clean, fresh cow's milk**, and should have no other form of food until the age of EIGHT MONTHS. The milk should be procured fresh twice daily, and should, in summer months or when **diarrhœa** is prevalent, be immediately **boiled.** The best way to do this is to put the milk in a jar which is then placed in a saucepan containing boiling water, and the water should be kept boiling for fifteen minutes. In this way boiling over or burning of milk is prevented. **Cool quickly** under running tap so as to prevent rapid growth of unkilled germs. The most deadly germs in milk cause the least souring, and are the most difficult to destroy. So that no milk that is not quite sweet at time of being used should be given to any child. Keep milk **covered** in a clean, "scalded" basin or jug, in a clean and cool, well ventilated place.

During the first month or six weeks the child should be given the bottle every two hours in the day, and every four hours at night; after this age the interval may be gradually lengthened to three hours in the day, and six hours at night. The child should get the bottle at the same time every day. To begin with, the milk should be diluted with two parts of water to one part of milk, the amount of water being gradually lessened until, at the age of six weeks, half milk and half water are being used. A small teaspoonful of fresh cream and white sugar should be added to each average feed of milk (4 ozs.) for a baby 2 months old, both varying from $\frac{1}{2}$ to 2 teaspoonfuls according to age of baby below or above 2 months. If cream is not added the cow's milk given is not as rich as mother's milk, and the baby fails to get a proper amount of fat, so that it may not thrive and grow good bone and teeth, but instead develop **rickets, &c.** Each feed should be warmed to blood heat by placing bottle in jug or bowl of hot water—judge temperature by tasting milk after shaking bottle. At the end of the SECOND MONTH the child should be getting about one pint of cow's milk daily, at the end of SIX MONTHS about one pint and a half, and at the end of TEN MONTHS about two pints. After the age of six weeks the amount of water should be still gradually reduced to one-third, or one-fourth, or less, until the child is about seven months old, when pure milk should be given.

The best kind of feeding bottle is the plain, old-fashioned, straight or boat-shaped one, graduated in tablespoonsfuls, **without tube,** simply with teat pulled over end of screwless bottle. The bottle should draw easily, and after each meal it should be washed out in boiling water, the teat turned inside out, scrubbed clean, and scalded. On no account must the milk left be used again: prepare a **fresh feed** for **each meal.** Renew the teat once a month at least, for rubber fouls quickly and then infects the milk and baby. After thus **cleaning** and **scalding,** the bottle and teat should be kept separate in a bowl of clean water (containing half a teaspoonful of borax) till the next time they are used. Wash thoroughly again in fresh water before feeding. Have two bottles and use in turn. If brush is used, clean often in boiling water.

It is a **vital necessity** that both **milk** and **bottle, brush, teat,** and **all utensils,** be kept quite **clean, sweet,** and **free** from **germs.**

Never give the baby the bottle merely to keep it quiet. Do not let it suck an empty bottle else it will get "wind on the stomach."

Some mothers may find it simpler to prepare the feed of Cow's MILK in this manner:—

Half-a-pint of good fresh milk and one pint of water with a small teaspoonful of white sugar are mixed and boiled, and then placed in a clean jug, and covered with a clean cloth. Four tablespoonfuls of this should be placed in the feeding bottle each time it is used, and the bottle scalded afterwards and kept when not in use as described. The infant should not be fed oftener than every 2 hours in the daytime, and every 4 hours during the night. This will be the diet up to the age of 6 weeks, one or two more tablespoonfuls being given as the child can take it.

When the child is 6 weeks old, one pint of cow's milk may be added to one pint of water, and from 6 to 8 tablespoonfuls used to each meal, the interval between meals being increased.

At the ages of 3 to 6 months, two pints of cow's milk should be mixed with one pint of water, 8 to 10 tablespoonfuls being used for each meal. The intervals between meals, and the quantity used at each meal may be increased as occasion requires. But it is necessary always to bear in mind the danger of over-feeding. In all cases the mixture of milk and water should be boiled and kept covered in a clean, scalded jug. Only a quantity sufficient for one feed should be got ready at one time.

The above directions furnish a food on which children may thrive, but it is poor in cream as compared with mother's milk, and those who can afford the extra milk would do better to proceed in this manner:—

For infants under 6 weeks old, purchase a pint of rich fresh milk in the evening and half-a-pint in the morning. Place the evening pint in a clean shallow bowl, cover with a clean plate, and put in a basin of water for coolness. In the morning skim two tablespoonfuls of cream from the bowl, and add to it the fresh morning half-pint in a tin can or jar. Add also a small teaspoonful of sugar, as much bicarbonate of soda (NOT washing soda) as will stand on a sixpenny piece, and a pint of water. Then boil as described, pour the mixture into a jug freshly cleaned with boiling water, and keep covered, &c. This preparation will have to last for 24 hours, and 4 tablespoonfuls should be placed in the feeding bottle each time, and given as before.

When the infant is 6 weeks old, the same amount of cream must be added to the PINT of new milk now required in the morning, with sugar, bicarbonate of soda, and a pint of water as before; 8 tablespoonfuls may now be used for each meal, passing GRADUALLY from four to eight.

After the age of 3 months the amount of milk required in the morning will increase to 1½ pints (less or more) at the age of 6 months. Now add 4 tablespoonfuls of cream, then sugar, bicarb. of soda, pint of water and boil as before. The skim milk left can be used to make a pudding.

When CONDENSED MILK is used, mothers should be careful to get only the BEST BRANDS, and the unsweetened milk should be preferred. They should always ascertain that they are getting UNSWEETENED WHOLE MILK. The milk should be diluted according to the directions given on the tin, which renders it necessary to get for infants only UNSWEETENED WHOLE MILK. The milk diluted as shown on the tin (2 water to 1 milk) should be tried without further dilution. (Dr. Niven.)

This table gives the quantities suitable for a healthy child:—

Age of Child.	Milk.	Water or Barley Water	Total Amount to be Given at each Meal.	Feeds per 24 Hours.
During first fortnight	1 Tablespoon	2 Tablespoons	3 Tablespoons	9
,, 2nd ,,	2 ,,	3 ,,	5 ,,	9
,, 2nd month	3 ,,	3 ,,	6 ,,	9
,, 3rd ,,	4 ,,	4 ,,	8 ,,	8
,, 4th ,,	5 ,,	4 ,,	9 ,,	7
,, 5th ,,	6 ,,	4 ,,	10 ,,	7
,, 6th ,,	8 ,,	4 ,,	12 ,,	7
,, 7th ,,	Milk practically unmodified.		13 ,,	6

No absolute rules can be given for infant feeding; children's stomachs and digestions vary as much as their faces. What is **food** for **one baby** may be **poison for another.** Every **mother,** therefore, must **study** her **baby,** and judge, with the **help** of her **doctor,** as to the amount and kind of food to be given.

If water is used to dilute the milk, it must first be boiled. If baby is constipated use barley water; if loose, add lime water in place of ½ water. Two teasps. of lime w. to each feed of milk & b.w. is helpful. Thus the tough **curd** of cow's milk is lessened and helped to digest.

If cow's milk thus modified still causes **"milk indigestion,"** do not let the baby continue to suffer and waste—**consult the doctor**—for it may be necessary to further dilute, "doctor," "modify," predigest, or replace cow's milk altogether.

Under eight months do **not** give the child farinaceous foods, such as arrowroot, cornflour, bread sops, biscuits, &c.—or any patent infants' foods (many are "starchy"),—without medical advice.

After six months one or two feeds a day of milk, thickened with Horlick's Malted Milk or Mellin's Food, **may** suit baby.

A good condensed milk, *e.g.*, Nestlè, a teaspoonful to six tablespoonfuls of boiled water, may—if **cow's milk cannot be digested**—prove useful for **short periods only,** but in a month, or less, cow's milk, suitably modified, should again be tried. **Stop** after sixth month else **anæmia, scurvy,** or **rickets**—fat too little: sugar too much.

"Skimmed" and "separated" milks are **useless** as foods. All Patent Foods and Condensed Milks are more **expensive** and much **inferior** to cow's milk; most of them are deficient in fat, or contain **starch,** which the young **baby cannot digest.** Such **starchy foods** either cause **rickets** and bone disease, or act as **irritant poisons,** and excite vomiting, diarrhœa, and even cause death. In this way many an ignorant mother has tortured and killed her child. Examine labels on condensed milk tins before buying.

N.B.—**Danger of overfeeding.** If baby is fed too often, from **bottle or breast,** or "whenever it cries," it will suffer from indigestion, colic, and diarrhœa. A baby's **cry** may mean **thirst** for **water,** or **pain** in the stomach, so that a teaspoonful or two of cold water often comforts the baby before feeding time, and less food, by resting the stomach, may relieve the stomach-ache. The latter may mean milk indigestion from causes other than overfeeding. A **doctor's** advice and **prescription** is now **worth more** than any **soothing syrup.**

DIRECTIONS FOR THE CARE OF THE CHILD.

Cleanliness.—Infants must be given a warm bath at least once a day, and mild soap should be used to every part of the body, including the head. The whole of the body should be carefully dried with a clean, dry, soft towel, and then dusted with boric acid 1 part, starch 2 parts, especially about the buttocks and the folds and creases of the skin. If the head is not washed scurf will form. This is easily removed by rubbing the scalp gently with a little oil. Infants should not be allowed to lie in wet or soiled napkins. The part covered by the napkin should be bathed and powdered each time the napkin is changed. In chafing of the skin, or severe "scalding under the napkins," a grease consisting of equal parts of zinc and boric ointments and vaseline may soothe and protect the skin better than powder. It acts on the same principle that "water runs off a duck's back." If baby wets its clothes, or is sick on them, change them as soon as possible. Keep the infant's hands clean, and take care that it does not put dirty fingers or clothes into its mouth, as it may thus get thrush, indigestion, and diarrhœa. THRUSH or frog is a dangerous affection, and is QUITE PREVENTABLE. When cleaning baby's mouth be sure your hands are perfectly clean first.

Keep the house scrupulously clean. Crumbs and particles of sugar or syrup attract flies which bring dirt and infection. *The infant must always be kept perfectly clean.* Put on a clean apron before handling your child. Do not place the baby on a dirty floor or else it will be injured both by dust and draughts. Do not let your child lie about in the morning in its night clothes until you "can find time to wash it."

Furnish your rooms plainly; avoid knick-knacks and draperies that collect dust, and require care which had better be devoted to the child. Plain furniture is cheaper, and can be more easily cleaned and moved about when the rooms are done, or at spring cleaning. Remember that cheap upholstered furniture is often stuffed with filthy and infected rags or other abominations. Children delight in picking holes and playing with rubbish! *Therefore do not lay up for yourself stuffing that corrupts.* Cover the bedroom floor with linoleum, or place a cheap square of carpet, or mats, about the bed. If possible, have a washable paper on the walls, or, better still, apply distemper or "duresco."

Clothing.—The infant must be warmly but loosely clothed, including the arms and legs, and so as not to hinder free breathing or movement of the limbs. The clothing should be of flannel or wool. Remember the danger of child-burning from "the deadly flannelette." An over-clothed or "coddled" child is sensitive to chills, and easily contracts bronchitis and diarrhœa. A flannel binder (not tight) should be worn until the child is able to wear knickers or combinations. Exposure of bare arms and legs is responsible for many deaths. Clothing which has become wet or dirty ceases to protect against cold, and is otherwise injurious. All dirty or wet clothes, or napkins, must therefore be removed at once, and are not to be used again without being washed. Never forget that soiled napkins should not be allowed to dry, but should receive a rough washing at once; then soak in plain water, and when convenient wash in hot suds, and boil for 15 minutes. Afterwards rinse thoroughly in PLAIN water, dry, and iron. Never use a damp napkin.

Air and Light.—Fresh air and sunlight, *indoors* and outdoors, are most necessary and beneficial for the baby. Keep the window ALWAYS open (unless fog) in sleeping and dwelling room, by adopting the "costless method of ventilation." This is done by placing a board 3 ins. deep—and the width of the window—beneath the raised lower sash. The room should be thoroughly aired twice a day at least. The chimneys should never be stuffed up or the registers closed. The fear of fresh air is at the root of many evils! Night air does not injure even a "consumptive"! Infants, like plants, require sunlight for their growth. Take your baby out as much as time and weather will allow into the cleanest and most open space you can find. Indoors, cold weather means fires, or a hot bottle in the cot—not shutting of windows: outdoors, warm clothing or a hot bottle in the peram—not "bottling up" of baby in the house! Baby must not be treated as a "hot-house" plant, if it is, it becomes pale and listless from poisoned blood, gets indigestion and sickness from poisoned stomach, stops gaining in weight, perspires freely, and takes cold easily, or develops a serious illness like bronchitis or pneumonia from poisoned lungs and enfeebled system.

Sleep.—Infants require plenty of sleep especially the first 3 months. Up to 3 years old, a morning and afternoon sleep, at fixed hours, is necessary. Accustom them to going to bed while yet awake, and avoid, as far as possible, nursing them to sleep in the arms. If possible, the infant should sleep in a cot by itself, else there is a danger of its being OVERLAIN—especially if its *parents are drunken*—and breathing impure air. The best cot for the poor baby is a clothes basket, or even a packing case, containing a thick bed of bran covered over by a thick, soft cloth. Renewal is easy and the mother's burden is light.

Quiet peaceful sleep is one sign of perfect health. Sleep is disturbed by almost anything which is wrong with the child. A few causes are:—chronic indigestion, too frequent night feeding—"an infant who is fed three or four times during the night is almost invariably a bad sleeper" (Dr. Holt), cold feet, wrong clothing (too much or two little), foul air in the bedroom, difficult breathing from enlarged tonsils or adenoids. A child sleeping face down suggests enlarged tonsils. Sleeplessness may be due to bad habits acquired by faulty training. Do not take a baby from its crib whenever it cries or wakes. Do not excite the child by vivid pictures or stories, or allow romping play with father just before bed-time—especially if the child has a nervous temperament. Children who are not thriving or are "out of sorts," who are bothered about lessons, or are driven too hard at school, suffer from sleeplessness. Cradle rocking is injurious and unnecessary. Never use soothing syrups or other sleeping medicines. All successful treatment of disorder and disease consists in the DISCOVERY AND REMOVAL OF THE CAUSE.

Children are creatures of habit, and acquire good habits just as easily as bad. *Therefore train up a child in the way it should go.*

Suitable fireguards should be provided to prevent accidents.

"'Flannelette, the absence of fireguards, and slatternly women who will not dress their children before the middle of the morning are three causes of more accidental deaths among children than any other,' exclaimed Coroner Hill at Brighouse during an inquest on a burnt child."

DIETARY FOR CHILDREN.

AT NINE MONTHS of age, and if teeth are present—for neither babies nor adults can chew without teeth—the child may have bread and milk, bread and butter, milk pudding, a little red gravy with bread crumbs or a little mashed potato, **or** the yoke of a lightly boiled egg, once a day, at the mid-day meal. It is advisable to vary the diet of a child occasionally.

AFTER NINE MONTHS, mutton broth, beef tea, or bread fried in bacon fat, may be gradually added to the diet. An egg daily, mixed with milk, or boiled lightly, or made into a pudding with milk and butter is an excellent thing. Broths should be strained, and solids well mashed.

AT ONE YEAR.—For breakfast: a good half-pint of milk with a little bread in it, or bread and butter, occasionally an egg lightly boiled, and thin oatmeal porridge. At 11, a little more milk. For dinner: broth, beef tea, boiled fish well minced, or pounded underdone meat by turns, with a tablespoonful of either well mashed greens or potatoes well soaked in gravy, and a tablespoonful of milky rice or custard pudding. For tea: bread and butter, and a good half-pint of milk. A little milk later in the evening if necessary.

FROM ONE TO TWO YEARS OLD.—Until the child is eighteen months old it should be fed at least five times in the twenty-four hours, viz., about 8 a.m., about 11 a.m., about 2 p.m., about 6 p.m., and about 10 p.m. The last meal in the day should consist simply of a drink of milk. The first (8 a.m.) and the fourth (6 p.m.) meals may, for the older children, consist of a rusk or a slice of stale bread soaked in milk, or a teacupful of oat-flour porridge; breadberry made very soft is suitable for the younger ones. The second (11 a.m.) should consist of a drink of milk and a plain biscuit or bread and butter. The third meal (1 or 2 p.m) may alternately consist (1) of a cup of good beef-tea or strained broth, pea soup or lentil soup, followed by a tablespoonful of light milk pudding; or (2) of a well-boiled potato bruised in good beef gravy, with a cupful of sweet milk.

After the age of eighteen months only four meals are necessary for a healthy child. The first, second, and fourth meals may be similar to those above, but bread may be given with butter or good bacon gravy, and sometimes a soft-boiled egg. Oatmeal may now take the place of oat-flour. For dinner, at 2 p.m., a little fish or minced meat may now be given alternately with beef-tea or strained soup, in addition to light puddings and sweet milk.

N.B.–The gain or loss in weight is the readiest indication of the baby's health, and is a guide or **danger signal** to the mother. For food may "stay down," and baby keep quiet, yet absence of suitable gain in weight proves that baby is not thriving, but perhaps dying from starvation, etc.

Fish or meat should not be given before the child is EIGHTEEN MONTHS old. When given it should be finely minced. Children, especially those **under three years** of age, should *not* be fed upon "just what the parents have," and other children should not be allowed to give it "little bits." Watch over the child's feeding most carefully lest **you cause convulsions and death.** Study these rules and apply them.

DIETARY FOR CHILDREN—Two Years and Upwards.

Children should be encouraged to take plenty of open-air exercise; they will thus be the more able to digest good wholesome food.

A child should be trained to eat its food slowly and to CHEW IT WELL. To assist in the thorough chewing of food, butcher's meat should always be cut into small pieces or minced. The child should not be allowed to drink till it has finished eating. [Drinking with food encourages bolting.]

Milk is not only the best but it is the cheapest form of food, and up till the age of 8 or 9 years, milk, and things made with milk, should form the chief part of the child's dietary.

The following are some of the best and most economical foods for children:—Oatmeal porridge and milk; peasmeal porridge and milk; bread (not new) and butter or margarine, or bread soaked in ham fat or dripping; oat-cake; potatoes (mashed or grated) with suet, dripping, margarine or butter; broth or soup made with a piece of mutton, a bone or a ham shank, and, in addition, potatoes, barley, lentils, peas or beans; mutton; fresh fish; boiled rice or sago with sugar; stewed fruits, as rhubarb, apples, &c. Lentils or peas [with stock] make a good soup.

Children should have four meals a day, but meat only at one. Children should be fed by regular meals and not by "pieces." A child who gets four regular meals needs nothing between them, and habits of regularity are soon learnt.

The following Table will give some idea of what should prove a diet scheme suitable for a healthy child under the age of 8 or 9. (The plan here shown may, of course, be modified, both as regards hours and character of the food, to suit special cases and circumstances.)

BREAKFAST, 8 or 9 a.m.—Porridge and milk, with bread and butter; sometimes an egg or a little fish, with plenty of milk.

DINNER, 12 or 1 p.m.—Broth or soup, and bread or potatoes; a little well-boiled fresh vegetables; a little butcher's meat; well-boiled rice and milk, or cornflour.

TEA, 4 or 5 p.m.—Milk or cocoa, with bread and butter.

SUPPER, 7 p.m.—Porridge and milk.

General Precautions.—No young child should be allowed just to take the "run of the house" or "what's going." Jellies and jams should not be given to the child in place of butter. Though cheaper and more pleasing to the child they are a poor substitute for butter or margarine, but may be given in addition to these. Unripe fruits, pastries, cheese and smoked fish disagree with children. Condensed milk is a poor substitute for fresh milk or skim milk. A good proportion of fat should be given. When it cannot be taken as fat of bacon or of meat it should be given as cream. Tea or coffee should not be given. Whisky or any other intoxicating liquor should *never* be given on any pretence. It is the duty of the mother to teach the child regular habits with regard to the motion of the bowels. [Constipation calls for more fat, fruit or vegetables.]

(Royal Hospital for Sick Children, Glasgow.)

WHAT TO DO.

ALWAYS feed the baby at regular intervals, every two hours at first, gradually lengthening the interval to three hours.

If the baby does not thrive on ordinary milk, either the milk is poor, or the method of feeding requires to be altered.

ALWAYS wash out the baby's mouth twice a day, night and morning. Take a piece of clean rag, fix it firmly round the washed finger, dip it into clean water, and wash the gums and roof of the mouth. Burn the rag. Use a fresh piece each time.

ALWAYS keep the baby very clean. N.B.—Soiled napkins are "infective." It is no sufficient precaution against indigestion and diarrhœa to feed an infant carefully if its clothes are allowed to remain dirty, especially after it has been sick.

ALWAYS bathe (or sponge all over) the baby once a day in warm water. Cleanliness comes before godliness in rearing a baby.

ALWAYS let the baby sleep in a cradle or cot; a wicker basket makes a good cot (or even an empty packing-case). But never let the baby sleep in the same bed with its mother. Impure air. Danger of overlying. 80 to 100 preventable deaths from this cause occur every year in Manchester alone.

ALWAYS attend to the baby when it cries. The baby cries for one of three reasons—

(1) The baby is hungry; or
(2) The baby is uncomfortable, or something hurts; or
(3) The baby is ill. *[Colic, cold feet, tight or wet napkin, etc., pin.]*

N.B.—Feed the baby by the *clock*, **not** by the *cry!*

WHAT NOT TO DO.

NEVER neglect to attend to the eyes of newly-born babies—*80 per cent. of cases of permanent blindness arise from infection at birth.*

NEVER give the baby soothing syrups, fever powders, or anything of that sort.

NEVER give the baby bread, or sops, or gravy, or any other food, except milk, till it is more than seven months old.

NEVER give the baby skimmed milk, or milk that is not perfectly fresh and good.

NEVER use a feeding bottle with a long tube. Nobody can keep the inside of the tube clean.

NEVER use a "comforter" or dummy teat. It is most injurious. [Thumb or finger sucking may cause irregularity of the teeth.]

NEVER let the baby crawl on a dirty and draughty floor. If its hands are allowed to become dirty, it will suck off the dirt as it does from a dummy, and all the benefits of proper feeding may be destroyed by this "filth infection."

NEVER carry the baby "sitting up" until it is five months old. Beware of mailcarts for infants under 18 months. Babies should take their airing lying down.

NEVER neglect to send for a Doctor if the baby is ill. Babies are soon overcome and easily die.

NEVER forget that it is the hand-fed baby that becomes rickety, that gets convulsions, and diarrhœa, and consumption of the bowels.

NEVER forget that "*the only way to humanise cow's milk is to pass it through the mother and not through a machine.*"

"MILESTONES" in the Development of the Child.

Every mother and nurse should be familiar with what Dr. Robert Hutchison in his "Lectures on Diseases of Children" has aptly called "**Milestones**" in the development of a normal child:—

1. **Teeth.**—The baby begins to cut his teeth at 6 months, and has all his milk teeth (20 in number) at the age of 2 years. A baby of 12 months should have 12 teeth. The permanent teeth (32 in number) begin to come at 6 years instead of 6 months, and at 12 years all except the wisdom teeth are present. Delayed teething often means rickets. N.B.—*Teething powders destroy the teeth.*

2. **Bone.**—The "anterior fontanelle" (the hole in the bone on the front and top of the head) should be closed between the 18th and 24th month. If not closed by 24th month, there is SOMETHING WRONG, *e.g.*, rickets.

3. **Muscle.**—A healthy baby holds up his head at 3 to 4 months—before this it merely waggles on the neck. The infant should sit up at from 9 to 12 months, walk at from 12 to 18 months, talk well at 2 years. If the child does not, beware of rickets, paralysis, or brain weakness.

4. **Weight of baby.**—At birth the average weight is 7 lbs., at 5 months it is 14 lbs., at 18 months 21 lbs., at 6 years 42 lbs., at 14 years 84 lbs. Note the doubling of the sevens as it assists memory. The rise in weight in the early months is greater than later on, but roughly throughout the twelve months of infancy the average increase is *one pound a month*. For example, a child 12 months old weighs 19 lbs.—7 lbs. at birth + 12 lbs. (one lb. gain per month) = 19 lbs.

5. **Length of baby.**—At birth the average length is 19 inches. It should be 38 inches at end of 4th year. Relative undergrowth in height and *loss of weight* in childhood is always a Danger Signal.

6. **Circumference of head.**—13 inches at birth; at the 9th month 17 inches; at 1 year 18 inches; at 5 years it has only grown another 2 inches. THE ENORMOUS RATE AT WHICH THE CHILD'S HEAD GROWS DURING THE FIRST YEAR OF LIFE IS DUE TO THE RAPID ENLARGEMENT OF THE BRAIN.

7. **Character of motions.**—For the first 8 weeks there should be three or four motions daily. This must not, therefore, be regarded as a sign of diarrhœa. For the first few days after birth the stools are greenish-brown and treacly. In a few days they become yellow, like beaten-up eggs, or thick mustard, in colour and consistence, and scarcely smell unpleasantly. Look for cheesy masses of curd in them, for if you find these you know that the child is getting more milk than he can properly digest. Up to the end of two years from about the 8th month there is an average of two motions daily. They now become stronger in smell, browner in colour, and more porridgy in consistence. After two years the motions are well formed and like those of the adult.

N.B.—If the motions are green and putrid, the bowels are wrong, and the feeding is at fault. So correct the feeding, and cleanse the bowels with a dose of castor oil. Costive and putty-like motions show want of bile. A grey powder or two will improve matters. Acid, irritating motions cause "scalding under the napkins," and call for more lime-water and a change in the feeding. Soiled and wetted napkins should be removed AT ONCE. Slime and blood in the motions mean "inflammation."

INFANT FEEDING; STARVATION; INDIGESTION.

Every mother should have some knowledge of the composition of foods and of the processes of digestion. Milk is composed of proteid, fat, sugar, salts, and water. PROTEID (curd ingredients) is required for the growth of the body in general, the blood, etc. Too little proteid means a starved, pale, probably rickety child. Excess of it is apt to cause "curd indigestion." Infants with delicate digestions experience more difficulty in digesting proteid than any other milk ingredient. FAT (creamy part) is necessary for the growth of the bones, teeth, nerves, the fat of the body, and for the production of heat. Too little fat in the food leads to much disorder and disease: wasting and weakness, dulness and constipation, cold hands and feet, rickets and physical wreckage. Excess of fat may cause "fat indigestion." Fats come next to proteids in importance, and in difficulty of digestion; patent foods are deficient in fats and proteid. SUGAR (milk sugar) is needed for the production of heat, and to make fat. Sugars are the most easily digested and absorbed, and are probably the least important of the food elements in milk. Excess of sugar, as in patent foods and condensed milk, gives rise to conditions of ill health and disease, and to "sugar indigestion." SALTS (lime, etc.) are necessary for the growth of bone. They are not present in a good form in patent foods. WATER is an essential in food; two-thirds of a fat baby consist of water! STARCH is **not** found in milk; were it necessary Nature would have provided it; its absence in milk, and its presence in cheap patent foods, should be noted by the mother. Starch is a poison to young babies, and causes "starch indigestion." The baby suffers, wastes, and dies.

Cow's milk is, in practice, the best available substitute for mother's milk. It requires modifying (humanising) in the manner described, before it is ready for infant consumption. Its drawback is the indigestibility of the curd, which is thrown down in the stomach—in the first action of digestion—in leathery lumps, instead of in the fine flakes of curdled human milk. Suppose a baby is **bottle-fed** on cow's milk. If it digests well, but thrives badly, it is being *starved*, *i.e.*, the food is too poor in part (*e.g.*, fat), or is insufficient in total quantity, *i.e.*, too little milk is given, or too much water added—perhaps by the milkman! The remedy is to strengthen the food in fat by adding cream or virol, butter or grated suet, or to enrich the milk, if curd digestion is feeble (watch the motions), with the more digestible proteid of meat in the form of 3 or 4 teaspoonfuls of raw meat-juice (freshly prepared), 3 or 4 times a day, or simply to give a larger meal, or a stronger feed of more milk and less water. Remember to *check the feeds* by the SCALES, and to note that in the case of a healthy baby, food should not only stay down, but the weight should continue steadily to go up.

If a baby digests badly, it thrives badly, because it is being starved and robbed of substance and strength in the acts of vomiting and diarrhœa. A baby *perishes on food it indigests;* it thrives on food it absorbs. If the curd of cow's milk disagrees, baby will suffer from

"curd indigestion," *i.e.*, from vomiting, colic, and wasting. Constipation may alternate with looseness of the bowels, for the infant passes pale, pasty, lumpy motions containing undigested curds, which are liable to irritate the bowels, and excite attacks of diarrhœa. If this happens, the milk must either be further diluted with water, or curd digestion be assisted by adding to the milk LIME WATER (if diarrhœa, or "scalding under napkins") BARLEY WATER or OATMEAL WATER (if constipation), EXTRACT OF MALT ($\frac{1}{2}$ to 1 teaspoonful to each warmed feed; useful in constipation, and when the little starch in the b. or o.m. water disagrees), or a little non-starchy, patent food like Mellin's. Possibly the fats are the cause of the trouble, and the infant suffers from "fat indigestion," viz., repeated vomitings between meals, and passes foul, fatty, light coloured motions. Instead of adding cream to the milk, give 2 or 3 cream feeds a day: cream, 1 tablespoonful; malt extract, 1 teaspoonful; barley water, 5 tablespoonfuls. If the cream feed causes more digestive disturbance than the milk feed, the fats are probably the cause of the difficulty; if the reverse, it is the curd.

If the baby cannot be induced by drugs to digest modified cow's milk of sufficient strength, and the child is otherwise healthy, and the stomach sound, the doctor may, perforce, advise the mother to try in turn, condensed milk, a patent food, or peptonised milk. But **note**—these foods are in no sense complete foods for infants; they should be regarded as make-shifts, and be reserved for temporary use by *sick* babies. So called "Infants' Foods" contain an excess of sugar—which is BAD, and a shortage of fat and proteid—which means STARVATION. Sugar-fed babies tend to be unhealthily fat and flabby, pale and puffy; they are specially liable to scurvy, rickets, wheezy breathing, bronchitis, pneumonia, croup; to "sugar indigestion"—chronic intestinal catarrh—windy colic and diarrhœa; to all inflammations and infectious diseases;—in fact there is a lowered *resistance* to all infant disorders, and a heightened *liability* to succumb to any trifling ailment. For the deceptive gain in dead weight is accompanied by an insidious loss in vital power. If peptonised milk is ordered for a sickly baby with feeble digestion, the time of peptonisation must, with recovery of patient, be gradually reduced by 5 minutes every 2 or 3 days, until the infant is proved to be able to digest an ordinary milk mixture. Remember that **no pre-digested or patent food should be continued longer than is absolutely necessary,** and that if such "temporary expedient" has been in use for over 2 weeks, 2 or 3 teaspoonfuls of orange juice, or raw meat juice, should be given daily to avoid risk of scurvy.

Strengthen the milk feeds with fattening stuff like cream, or virol, when the stomach will tolerate them, and note these points of successful infant feeding—(1) Food stays down; (2) weight goes up; (3) baby is well, and (4) free from colic; (5) curds, etc., are absent from the motions; (6) give clean "meals on the minute"; (7) let appetite be guide for quantity; (8) *never coax a sick child to take food.*

To obtain the best results in the shortest time with the minimum suffering, adopt a *system* devised and supervised by a medical man.

Suppose a sound baby is **breast-fed**. If it digests well, but thrives badly, it is being *starved*, *i.e.*, the food is too poor in part (*e.g.*, fat or proteid) and is insufficient in total quantity—the mother's milk is either too thin or scanty. The remedy is to improve the milk by TREATING THE MOTHER, failing which to supplement mother's milk by cow's milk, for "mixed feeding" is not injurious, and should be tried when, in spite of care, baby *ceases to gain* properly in weight. The nursing mother should note that alcohol is **not** a milk-producer; indeed it may **poison the milk**; she should be well-fed, and kept free from worry, for baby will not thrive on milk secreted on "fret and fume." Severe physical labour, and strenuous social activities, may make mother's milk unfit for human consumption! Devotion to the home-life, and to the care of the infant, is essential for successful suckling. Self-drugging is bad; constipation in the mother may cause colic in the infant; as soon as the mother is out of health the milk suffers, and a mother who improves her own health will also improve that of her baby; when in doubt as to her health or habits, a mother should not hesitate to seek MEDICAL ADVICE, particularly if the **baby's health is failing**, or if the cry of hunger is heard after a breast-feed, and it seems that the baby must be weaned or partly hand-fed. A breast-fed baby may digest badly and thrive badly, for the same reasons as a bottle-fed baby. Intelligent food trials under medical supervision will, however, solve the difficulties of digestion, provided the mother will exercise patience, and adopt a feed-system.

A baby is starved, and **wastes**, (1) through not getting enough food of a proper kind, or (2) because it gets food of an unsuitable kind or (3) as a result of improper feeding it develops *inflammatory* indigestion, vomiting, and diarrhœa, which are wasting disorders, or (4) because of GRAVE DISEASE in the stomach or other parts requiring medical treatment. In practice, INSUFFICIENCY and INDIGESTIBILITY of food are commonly ASSOCIATED. *To sum up—the use of a dirty tube-bottle, careless feeding, the giving of an unsuitable (too weak or too strong) milk mixture, or of a condensed milk, which is deficient in fat, or the too early use of patent and starchy foods, will lead sooner or later to dyspeptic diseases and wasting of the infant preventable by care in the selection and preparation of the food.*

Some **golden rules** for feeding sickly and delicate babies, which should be strictly observed, are (1) to give no food until the stomach can retain and digest it; (2) to let the baby suffering from sickness and diarrhœa have as much *hot water* as it can retain—so as to help in washing out the stomach and bowels; (3) to begin with very weak food, given a little at a time, and slowly; (4) to strengthen the food gradually, for any sudden increase in the strength of the food will upset the digestion, or aggravate an indigestion; (5) to be careful in convalescence as regards the food and feeding; to weaken the food by replacing 2 or 3 tablespoonfuls of the mixture in the bottle with the same quantity of boiled water, should sickness, colic, or other indication of indigestion appear; (6) to note that egg water, meat juice (or teas), peptonised milk, whey, condensed milk, equal parts of milk, lime water, and barley water, represent in order a scale of digestibility of foods for a sick baby; (7) to remember that cleanliness, regular habits, warm feet, fresh air, etc., greatly influence baby's digestion.

STOMACH DISORDERS OF CHILDREN.

Baby, like an adult, is liable to acute and chronic indigestion, and the cause is improper feeding (food dirty, tainted, unsuitable, in excess, etc.), perhaps aggravated by a chill or neglect from careless mothering. This indigestion may affect the stomach or bowels, or both together. In stomach or "gastric indigestion" VOMITING is the prominent feature; in bowel or "intestinal indigestion" baby suffers from WINDY COLIC and DIARRHŒA, and passes loose, often offensive, stools containing undigested food (curd, etc.), slime, or even blood.

Acute Vomiting is seen in acute indigestion or "gastric catarrh" (inflammation of the stomach), and is accompanied by feverishness, furred tongue, sour breath, etc., and is often followed by diarrhœa caused by the stomach irritant escaping into the bowel and inflaming its delicate lining. **Note** that scarlet fever and other infectious fevers, besides meningitis (inflammation of the brain) and kidney disease, may begin suddenly with vomiting, and at first imitate a simple stomach disorder. Sound treatment is based on correct diagnosis.

Chronic Vomiting, though often a sign of *chronic* indigestion caused by *chronic* faulty feeding, may be the result of disease NOT in the stomach but in the brain or kidney. Neither mother nor nurse should be ready to accept the obvious, and should distrust diagnoses of disease based on limited knowledge and unlimited assurance. Chronic vomiting may be one of two types—*real* and *sham*. The SHAM vomiting of health is known as "possetting"; the stomach simply ejects its excess of food; and baby thrives because of this safety mechanism for unloading undesirable cargo! Careful mothers should, however, regard this as a *danger signal*, and should regulate feeding accordingly, for *sham* may be the forerunner of *real* vomiting. Fretfulness, stomach-ache, sickness, and indigestion are caused by the baby being over-fed or fed irregularly, and stomach disorders may lead to wasting, and death from fits, or pave the way for many diseases from which baby might otherwise escape. Note that *baby lives on food it digests.* In the REAL vomiting of *ill* health (or *ill* food) there is irritation plus DISEASE of the stomach—a chronic indigestion. Here there is frequent vomiting between meals, the vomit is sour and contains chunks of hard curd and mucus, and the dyspeptic baby suffers from windy colic, a diarrhœa with perhaps green, curdy, slimy, and offensive motions, and progressive **wasting.**

N.B.—**"Consumption of the bowels"** is most frequently a misnomer for chronic intestinal indigestion and diarrhœa, the results of improper food or over feeding.

The child suffering from "gastric catarrh" is pale and out of sorts, cross and irritable. The tongue is furred, breath offensive, appetite poor and capricious, and there may be some sickness and stomach-ache. The bowels are usually constipated, although diarrhœa is often present, especially in younger children, on account of the complicating catarrh of the bowel or intestinal indigestion. The rational treatment once more, in child as in infant, is to KEEP OUT and CLEAR OUT by emetic or purgative. Judicious starvation is the remedy of **rest** for a stomach sick, inflamed, coated with slime, and devoid of its natural digestive juices. Solid food (milk puddings, fish, etc.) may be given as the appetite returns, the tongue clears, and the bowels become more natural.

INFANTILE DIARRHŒA.

DIARRHŒAS.—They may be divided into 2 classes, SIMPLE and SEVERE.

A simple diarrhœa is often due to infection from a dirty bottle and tainted milk, or to indigestion set up by some irritant in improper, or improperly prepared food, *viz.*, indigestible curd (cow's milk), starch (arrowroot, bread, cheap patent foods), sugar (condensed milk, patent foods), "just one gooseberry," "food what we have" (from the parents' plate)! **Do not forget** that patent foods may easily become patent *poisons*. Bear in mind this practical point—diarrhœa in the breast-fed baby is usually traceable to the FEEDING, but in those hand-fed to the FOOD; therefore diminish the frequency of the feeding time or the amount given at each feed. Do *not* neglect even a simple (?) diarrhœa of baby during hot weather; do *not* think that it will pass off, as the baby may be so ill in 24 hours that no treatment will be of any use.

The **cure** of a simple diarrhœa due to a passing irritation of the bowels is effected by the **regulation** and proper **preparation** of baby's **feeds**—always of course, combined with scrupulous **cleanliness** of everything and everybody concerned. Remove the irritant—CLEAR OUT the bowels—by one or two doses of castor oil. Do *not* overfeed—underfeed for a few days. KEEP OUT unnecessary food. Replace milk with whey or veal broth for a day or two, and FLUSH OUT the bowels with plenty of plain water. Do *not* be afraid that the baby will starve if only plain water or barley water is given for a day or two. Do *not* think when a baby cries or is sick that it only wants more food, it may have a thirst which should be quenched with cold water! These remarks apply also to older children suffering from faulty feeding.

The severe and fatal form of diarrhœa in infants is known as summer or "**Epidemic Diarrhœa**." Not only does food slip through the inflamed bowel, but the body is poisoned by *toxines* (products of germ growth) absorbed from the infected bowel. **Acute Ptomaine Poisoning** in older children is a similar product of food poisoning. The disease with its vomiting and purging runs a very rapid course like a case of acute cholera, and the child may be moribund in 24 hours—shrivelled, cold, collapsed, convulsed, or comatose—though more commonly the disease lasts from 4 to 7 days and ends in death, complications, or slow recovery. The bowel may be so damaged that months elapse before health is completely restored.

Mothers should **not** forget that this is an acute **infective** disease and that precautions must be taken to prevent the spread of the affection. Soiled diapers should be at once immersed in cold water, in a receptacle provided with a cover, and sterilised by boiling in the "copper" as soon as possible. Scald out all vessels after use. Mother should carefully wash and disinfect her hands after attending to baby. Health visitors should never tire of preaching the doctrine of fresh air and sunlight, soap and boiling water; for if it is too late to preserve one, it may not be too late to prevent the infection of many.

In such a deadly disease **medical advice** should be sought without delay. Let baby be kept *quiet* and *warm*, in its cot, in the freshest of air. Obey the doctor's orders implicitly, and if he orders *fasting* from strong food and *flushing* with hot water, **remember** that by timely fasting your child may live, and that by untimely eating it may die.

HOW TO PREVENT DIARRHŒA IN BABIES.

A considerable number of babies die each hot season from this cause. The danger of dying from Diarrhœa in Brighton, says Dr. Newsholme, is 50 times greater for babies fed with cow's milk, and 100 times greater for babies fed with condensed milk than for babies who are breast fed.

1. The most important means of preventing death from Diarrhœa is therefore to **continue breast-feeding** the baby, and particularly **do not wean** your baby during the hot months of July, Aug., and Sept.

2. If you are obliged to feed the baby by hand, carefully follow these directions:—

(1) Fresh cow's milk is **safer** than condensed milk. Condensed milk attracts flies which convey infection into the milk. The excess of sugar in condensed milk is objectionable. The milk soon goes bad after tin is opened. Separated or skim-milk, whether condensed or not, means starvation to a baby. Buy the *best* milk you can, *twice* a day—cheap milk is dangerous.

(2) Cow's milk should be **scalded or boiled** as soon as it comes into the house, at any rate, in the hot summer months.

(3) Cow's milk should be kept in the **coolest and cleanest** place in the house to which air has free access.

(4) The milk jug should be **covered** with a clean wet cloth to keep out dust and flies; in hot weather stand it in a basin of cold water to keep cool.

(5) The **milk jug,** as soon as emptied, should be washed out with tepid water, then **scalded** out, and kept absolutely clean.

(6) **Never use** again the food prepared for a previous meal—milk quickly sours.

(7) The feeding bottle must be thoroughly **washed after each meal.** It is best to use alternately two boat-shaped bottles without tubes, and the nipple of these should be turned inside out for cleaning. Bottles with tubes are always dangerous. If the bottle smells sour, something is not clean, and the baby will suffer. Good milk is often spoiled by dirty bottles. Note that the stronger the bowel in the winter, the more **resistant** is baby to fatal diarrhœa in the summer.

3. Decomposing refuse, such as decaying vegetables, bones, fish-heads, etc., is a **fertile source of Diarrhœa.** It should be **burnt,** and not placed in the dust-bin. Flies are bred in manure heaps and other decomposing refuse. They carry contaminating material about with them, and should not be allowed to have access to sugar or other foods. Fly-papers should be employed, and all foods covered up.

4. **Scrupulous cleanliness** of the person and house, especially of the rooms where food is stored, is most important. Dust in every form is dangerous to health, and for removing it wet cleansing is preferable to dry. Thus washing and scrubbing are safer means of cleansing floors, etc., than sweeping. Keep baby and its clothes **clean;** do not let it suck a dummy; do not let it crawl on a dirty floor.

5. Report to the Sanitary Office, Town Hall, any smells, nuisances, or choked closet or drain. If any excess of flies appears to be caused by a neighbouring manure heap, complain at the Town Hall.

N.B.—Dirt, improper food, neglect, and **want of fresh air,** are the great preventable **causes** of infantile **Diarrhœa.**

CONSTIPATION; COLIC.

Constipation is a common trouble in infants, both breast-fed and bottle-fed. It may cause much discomfort, indigestion, windy colic, weakening of the bowel; rupture, and fall of the bowel, through abdominal distension and straining. The commonest cause of constipation is some fault in the quality or quantity of the **food.**

In the case of the BREAST-FED baby the mother's milk may be short of fat; suckled babies are apt to suffer from constipation. The mother should take sufficient out-door exercise, and have plenty of porridge, golden syrup, gruel, vegetables and fruit in her diet. A puny baby may improve if it be given a small teaspoonful of cream in a little tepid water 2 or 3 times a day; give drinks of plain water, barley or oatmeal water, between feeds if baby is otherwise well. If the mother's milk is poor, and baby is ill-nourished and costive, one or two feeds daily of suitably prepared cow's milk will be found better than the water alone. A bottle of Mellin's food night and morning may better supply the necessary stimulus (sugar) when digestion is also imperfect.

In the case of the BOTTLE-FED baby the same principles guide us. Fat has a lubricating action on the bowel, therefore give fat in the form of 1 or 2 teaspoonfuls of cream, olive oil, or cod liver oil 2 or 3 times a day. The addition of sugar to the milk in the shape of malt extract or some malted food, *e.g.*, Mellin's, may prove effective. A teaspoonful or two, more or less, of fluid magnesia can be added to the milk-feeds instead of lime water. Drinks between feeds of a little warmed water sweetened with honey or treacle is a simple remedy. Orange juice, a tablespoonful diluted with water, and given in divided doses, will often relieve constipation. Kneading and massage of the abdomen with a warm hand lubricated with olive oil, and rubbing along the large bowel around the belly from the right lower corner to the left lower corner, will often prove useful.

In neglected and obstinate cases an enema of soap and water, or the injection into the bowel of a teaspoonful of glycerine, may be required in addition to aperient medicines by the mouth. The combination of aperient with enema is superior to the former alone. In place of an injection mothers may find useful a glycerine suppository, or a piece of soap, sharpened like a lead pencil, gently inserted up the bowel. Therefore treat constipation, in order, by (1) dieting; (2) massage; (3) enema; (4) suppository; (5) drugs—last of all.

Colic, or griping, is a common symptom of the indigestion of infants, and is caused by wind in the bowel in a state of "spasms." It is due to some fault of digestion through **improper feeding,** and is therefore commonest in bottle-fed babies. Do not simply treat with dill water, or frequent doses of castor oil, or poisonous syrups. CORRECT THE CAUSE by an intelligent study of the feeding habits of the baby, cure the constipation, and relieve the attack by (1) hot fomentations to the belly, (2) an enema of soap and water, (3) a grain of calomel (chemist will supply these useful powders), (4) half a soda mint lozenge in a teaspoonful of peppermint, or dill water, to soothe the baby, and to relieve the wind-bound bowel by dispersing the wind, and straightening the kinks.

THE CHILD'S BOWELS.

Most of the digestible portion of the food is absorbed by the time it reaches the large bowel. The large bowel is concerned with the regular removal or scavenging of the waste matter from the body. To prepare for this the large gut gradually absorbs the water from the thick fluid entering it from the small gut, and makes it more solid and suitable for evacuation. If the bowel is irritated or inflamed by bad or indigestible food, or by disease, these natural arrangements are completely upset. For not only are the contents of the intestine passed from the body too frequently *(diarrhœa)* and the water does not get time to be absorbed, but water, slime, and perhaps blood are poured from the inflamed bowel, giving rise to loose, unnatural motions. On the other hand, when the bowels act less often than once a day, too much water is absorbed, and the motion (or matter passed) becomes very solid and hard. This condition is called costiveness or constipation, and means IMPROPER FEEDING, deficiency of water and fat, NEGLECT, too little exercise, or—disease.

Constipation.—Habitual costiveness or *chronic constipation* is a common cause of bowel trouble, *e.g.*, catarrh, colic, prolapse or fall of the seat, and slight ailments like headache or bilious attacks. In adult life it is the cause of much misery and suffering. Care should be taken that the bowels are not neglected, and a regular action should be secured each day, as a **bad habit developed in childhood may remain throughout life.** To avert this catastrophe, children should be taught and encouraged to form a habit of relieving the bowels regularly at the same time every day, say after breakfast. When, however, the desire for relief comes, it should be attended to without needless delay. A mock modesty should not be allowed to quell Nature's call.

Diet—Older children should be given plenty of fruit and vegetables prepared, if need be, with salad-oil, which is laxative. Brown bread, oatmeal as porridge, Scotch oat-cake, bran biscuits. Give drinks of cold water *between* meals. Teach the child to rub and thump the belly to improve the tone of the bowel (massage). Encourage outdoor exercise with plenty of roll and tumble of the "runabouts." Give drugs last of all, as they are usually of least importance; use senna pods (v. page 13).

Diarrhœa.—Bad, indigestible, or unsuitable food and fruit may irritate or inflame the bowel and cause diarrhœa. Unripe or over-ripe and rotten fruit, stale and partially decomposed meat [especially in the form of pork pie, sausage, or tinned things]—all annoy the gut, and often excite a catarrh of the bowel and very severe diarrhœa which may prove fatal. In hot weather germs grow very quickly, and now, owing to the rapid growth of microbes in food, fish, meat, and milk, these are likely to go bad quickly, and give rise to diarrhœa or ptomaine poisoning.

Diet—Judicious starvation. Prevention consists in children eating the things they ought to eat, and in avoiding those things they ought not to eat.

Worms.—The commonest met with in children are the *thread-worm* and the *round-worm*. The infection is carried from raw fruit or vegetables, or on the fingers from some source of infection. The eggs are unlikely to be hatched in a healthy bowel. Thread-worms may produce local itching and inflammation, with discharge from the female genitals, etc. If worms are suspected, give castor oil and search motions.

RICKETS.

Dangers.—Rickets is a very serious disease of childhood, for it causes bandy legs, knock knees, curvatures of the spine, "pigeon breast," and other deformities; it helps to produce dangerous chest diseases like bronchitis and pneumonia, consumption and asthma; croup and convulsions, diarrhœa and gastro-intestinal disorders; it favours unhealthy growths like adenoids, with their string of complications; it predisposes to disease of any kind; finally, it increases the number of deaths occurring during attacks of any disease—measles and whooping cough in particular. RICKETS IS ONE OF THE MAIN CAUSES OF DISEASE AND DEATH IN THE FIRST FIVE YEARS OF LIFE.

Signs.—It is recognised when well developed by the "hot-cross bun" head with the open hole in head, the deformed chest with the beaded ribs or "rickety rosary," the knobby joints with the curvature of the long bones, the distended abdomen known as "pot belly," with its sicknesses and diarrhœas, and the pale, fretful, flabby, perhaps fat, late-in-teething child.

Note.—The onset of rickets is insidious—night restlessness, head sweating, &c.; it may be well "set" before it is *seen* by the mother. Early detection and treatment of disease means prevention of much suffering and permanent deformity.

Prevention.—It is very RARE IN BREAST-FED babies. It is common in neglected hand-fed babies, particularly in babies fed on "dead" patent foods or "cooked" condensed milk. The fault in the diet which chiefly causes it is TOO LITTLE FAT IN BABY'S FOOD. All sweetened condensed milk and patent babies' foods contain *too little* nourishing fat and curd, and *too much* sugar or starch, which breed indigestion and diarrhœa, rickets and scurvy. Fresh cow's milk is the best, failing mother's milk, and even this can often be improved by the addition of one (or more) teaspoonfuls of cream or virol to each meal. Half to one teaspoonful of cod liver oil twice a day is an excellent means of preventing rickets. For children **over one year** of age, fat is still an important means of preventing rickets; it seems somehow to assist the child's digestive organs to utilise the lime salts supplied them in sufficient quantity in the milk and other food. **Note** that butter, or if this cannot be afforded, margarine or dripping, spread on bread is a better food than bread and jam. Nothing can satisfactorily take the place of milk and porridge in children's food. For use of orange juice, raw meat juice, &c., and for detailed instructions respecting the dietary of the child consult the writer's "Health Talks about Children."

Not only is **faulty feeding** a cause of rickets, but **faulty upbringing**, *i.e.*, dirt, neglect, impure air, unhealthy environment; therefore use freely those cheap restoratives, FRESH AIR and SUNLIGHT, SOAP and WATER—wash out the dirt, bring in the air.

Scurvy Rickets—A rarer disease allied to rickets. Rickets is due to insufficient *fat* in the food, scurvy to lack of *fresh* food. Note the pallor, tenderness on touching, spongy, livid, bleeding gums, &c., in a rickety child. All patent or cooked foods must be stopped, and an abundance of fresh, "living" food given in the form of pure unboiled milk, cream, raw meat juice, fresh fruit juices, potato soup, &c. The cure effected in this blood disease by a change of diet affords the most striking example of a "food cure" in the whole range of medical treatment. **Remember** that "THE ADDITION OF PATENT FOODS TO THE DIETARY OF VERY YOUNG CHILDREN IS NEVER NECESSARY, SOMETIMES DANGEROUS, AND ALWAYS EXPENSIVE."

CONVULSIONS; THE PREVENTABLE FIT.

It is important for every mother to know the causes of convulsions and their relation to improper feeding, wasting, and rickets. Fits are commonest in bottle-fed infants. Sour milk, or improperly prepared cow's milk (or its substitutes), is *the* cause of baby's indigestion which induces sickness and griping, wasting and worry, and the passing of stools which are green and curdy, offensive and poisonous. Dirt infection is responsible for "dirt indigestion." Mother's milk is pure and sterile; cow's milk is often impure or faked with antiseptics. Not only is cow's milk more indigestible and less pure than mother's milk, there is greater risk of infections by the mouth from the bottle than from the breast. There is also greater liability to sore gums and thrush, which again are apt to complicate neglect and dirty feeding, and derangements of the stomach and bowels, for these are shared by the mouth which is really part of the digestive tract. Such a condition is usually responsible for the "teething fits" of the infant. A young baby is very sensitive to infection of any kind, and is intolerant of poison in any form. Improper feeding and indigestion lead to the production of poisons which are responsible for the *intestinal intoxication* of the ill-fed infant. These poisons are absorbed into the blood, alter its nature, and are partly responsible for the wasted or rickety child. The brain of the little waster is but a trembling, ill-balanced structure; rickets renders a child so "weak in the head" that a convulsion may arise from the slightest cause. The pangs of indigestion aggravate the weakness of brain and body, the result of wasting or rickets. These then are the causes of the PREVENTABLE FIT—*a complication of dirt and indigestion, wasting and rickets.*

Convulsions may occur at the onset of some acute disease like scarlet fever, instead of the "cold shake" of the adult. They may, however, be the result of serious brain disease; they may be real attacks of **epilepsy**. Epileptic fits may at first be very slight, and seem to be nothing more than passing faints. If, however, they recur *without* any obvious cause, or *with* any noticeable mental peculiarity or backwardness, the outlook becomes a serious matter, and such a child will require very judicious handling indeed.

"And like vomiting, 'fits' may be **real** or **sham**. A doctor is often told by an anxious mother that she is sure her child has 'inward convulsions,' or 'inward fits,' or 'screaming convulsions.' Such fits are often sham likenesses and have nothing to do with the genuine convulsion. Many children under the irritation of teething or colic will wince and writhe, or exhibit some twitchings of muscles, particularly muscles of the face, which the fond mother is apt to suppose are the twitchings of true convulsions. They are not! But just one word of warning, a nervous, excitable, twitchy child may, in this way, indicate a tendency to 'fire off' convulsions, and therefore calls for particular care in feeding and regulation of bowels, as well as protection from 'starts,' undue driving at school, or unwise correction at home."*

In every case of fits medical advice should be sought for a CAUSE—there are many—and, if possible, to stop the fit, and to prevent a recurrence, and the formation of the fit habit.

* Extract from the writer's "Health Talks about Children."

DIET IN CONVULSIONS AND EPILEPSY.

Fits, whether epileptic or not, in older children as in younger, require for their treatment most careful dieting. It is better to give food "mixed" in character, and MODERATE in amount so as to avoid overloading the stomach. Bolting of food should be checked, and thorough mastication encouraged. Constipation **must** be cured. For breakfast—cocoa, with lightly boiled egg and cold buttered toast; dinner—a moderate quantity of beef, mutton or poultry, tripe or codfish, with tender vegetables; milk pudding; stewed fruit. Tea—cocoa, or milk, toast, with treacle or honey. Supper—milk with a slice of thin bread and butter.

Epilepsy—Select food from milk, eggs, butter, cheese, rice, macaroni, tapioca, white bread, potatoes (little), cabbage, lettuce, cauliflower, peameal (little), sugar, and fruit. Of meats give preferably tripe, neck of pork, codfish. Avoid tea and coffee, exclude salt as far as possible from the dietary, and most kinds of fish and meat.

The diet **must** be carefully selected and frugal. Much milk is bad.

N.B.—Advertisers who write "I cure fits" ARE ABSOLUTE QUACKS.

DIRECTIONS FOR THE CARE OF RICKETY CHILDREN.

Rickets is a disease which shows its effects principally in the bones of the limbs, but which, nevertheless, affects all other parts of the body; the bones are softened and are liable to bend under the weight of the body, so that the child should not be encouraged to walk much if deformity of legs is to be avoided.

The child should not be clothed too warmly by night or day. It should be taken out of doors as much as possible when the weather is fine, and the room in which it sleeps must be kept fresh and cool—adopt the "costless method of ventilation" in both bed and sitting room. *Bathe* the child once daily in warm water.

To improve the condition the greatest care is necessary in giving the child suitable food, which must be nourishing and easily digested.

During the first nine months the child should be fed on milk, preferably the mother's milk. Later, the diet must consist of cow's milk and things made with it, bread and mild, milk puddings, etc., and when the child is more than a year old, gravy, to which bread crumbs, potatoes, or other cooked vegetables may be added, eggs, lightly boiled or beaten up in milk, and a little bread and butter or dripping. The juice of an orange three times a week is excellent; so is underdone scraped meat.

The child must be fed at regular times and given nothing between meals. The child must *not* be given sweets, biscuits, buns, cakes, pastry, condensed milk, or patent foods of any kind, or ham, salt beef, bovril, salted and smoked fish. Give milk, or milk-cocoa, instead of tea.

If you are ordered splints for the child's legs, be careful to observe how they are put on so as to avoid causing sores. They must be removed in the evening when the child is put to bed, and put on again in the morning, the ends of the splints projecting beyond the feet, and the bandages applied right up to the top of the thighs, so that the child cannot walk, or double its legs up when sitting.

FOOD RECIPES FOR SICK CHILDREN.

Lime-water.—Put a lump of freshly burnt lime (to be got at any builders' yard) as big as an egg into a basin, sprinkle cold water over it to slake it. Then put it into a large, clean, wine bottle, fill with water, cork, shake well, and let it stand for 24 hours. It will then be clear, and what is required can be poured off from time to time, taking care not to shake the bottle. Some undissolved lime will remain at the bottom, and while any of this is left the bottle can be filled up with water again as it is drawn off. Keep well corked.

Barley-water.—To make of average strength add two teaspoonfuls of Robinson's Prepared Barley (in powder) to one pint (two tumblerfuls) of water, and then simmer gently for fifteen minutes, strain and mix with the milk. Make fresh each day and keep covered in a cool place.

Oatmeal-water, Rice-water.—Made in the same way by substituting prepared oatmeal flour or ground rice, and mixing in the same proportions. [When babies are very costive, boil a teaspoonful of oatmeal in $\frac{1}{4}$ of a pint of water, with a little salt, for 15 minutes, strain and mix with half as much boiled milk, and a lump of white sugar. Give this instead of the milk and water.]

Beef-tea.—Take 1 lb. of shin beef, remove all fat and gristle, shred it, or cut it up into small pieces, place it in an earthenware jar with one pint of cold water and half-a-teaspoonful of salt. Allow it to lie for one hour. Place the jar, which should be provided with a lid, in a saucepan containing water. Allow to simmer gently (*not* boil) for six hours. Then strain off through a coarse sieve, and flavour to taste. Instead of simmering in a saucepan of water, the jar (covered) can be kept in the oven for several hours. Add water to make up for loss by evaporation.

Mutton, Veal, or **Chicken** may be substituted for beef.

Raw Meat Juice.—Scrape $\frac{1}{4}$ lb. of fresh raw beef into a saucer and sprinkle over it a little fine salt; add two tablespoonfuls of cold water. Stir well together, and press the meat with a spoon. Allow it to lie covered in a cool place for an hour, pound again, then strain the juice through washed muslin by twisting it. It may be given cold or slightly warm as directed.

Mutton or **Chicken** may be substituted for beef.

Whey.—Add a teaspoonful or two of Benger's Artificial Rennet to a pint of warmed milk. When the curds have separated from the whey, break them up finely with a fork, and strain off the whey through muslin or a fine wire sieve. "Scald" the whey to destroy the rennet, and cool quickly under tap.

White Wine Whey.—Bring to the boil one tumblerful of milk (half-a-pint) in a saucepan, then add one wineglassful of good sherry. Boil for a minute or two, then pour into a clean basin and allow to stand in a cool place until the curd settles. Pour off the whey carefully or strain through muslin.

Albumen water (egg water).—The white of one raw fresh egg, half-a-pint of cold water, pinch of salt, one teaspoonful of brandy. Shake thoroughly. Give cold either with a spoon or from a bottle.

Peptonised Milk.—Use "Fairchild's Peptonising Powders" according to instructions enclosed.

Important Instructions from Public Health Authorities.

Use of Ashpits.—As the name denotes, ashpits are intended only for ashes. In order to prevent a nuisance arising and to diminish the number of flies during the summer months, it is particularly requested that no materials likely to decompose and become offensive should be put into ashpits. Materials such as fish heads, vegetable refuse, bad fruit, &c., should be burned in the kitchen grate.

Your attention is also drawn to the fact that the deposit of wet refuse in ashpits is forbidden by the Bye-Laws in force in the Borough. The observance of these simple precautions will tend to improve your own and the public health.

Stoppages in Water Closets and Drains.—It has been found that in many cases water closets and drains have been choked through the carelessness and negligence of occupiers of dwellings and other places, by allowing to fall into water closets and drains such things as scrubbing brushes, milk tins, stones, pieces of wood and iron, and other articles ; and also through not properly flushing water closets after being used.

Under the provisions of certain Acts "Every person who shall throw or cause to fall into any sewer, pipe, or drain, anything that obstructs the flow of water through such sewer, pipe, or drain is liable to a penalty of **Forty Shillings.**"

House let in Lodgings, &c.—

(1.) The yard must be thoroughly cleansed at least once every week, and the ashpit must be kept in good order and in a wholesome condition.

(2.) No filth or wet refuse must be thrown into the ashpit.

(3.) All floors, landings and staircases must be kept clean at all times.

(4.) The windows of every room used for sleeping purposes must be opened for at least one hour in the morning and for one hour in the afternoon, unless the state of the weather or sickness renders it inadvisable to open such windows.

(5.) All solid or liquid filth must be removed once at least in each day from each room, and the bucket or utensil which contained the same must be thoroughly cleansed.

(6.) No animal shall be kept to render any room filthy or unwholesome.

(7.) Infectious disease must be at once reported to the Authority.

Notice to Parents.—Parents and others having charge of children are hereby **cautioned** that they are required **by law :—**

(1.) To PROPERLY FEED such children.

(2.) To PROPERLY CLOTHE such children.

(3.) To send such children to SCHOOL.

(4.) To send for a DOCTOR if such children are ILL.

Parents and others failing to carry out these obligations are liable on conviction to **Fine and Imprisonment, with or without Hard Labour.**

INFECTIOUS FEVERS.

Introduction.—*Infection* means communicating a disease from one person to another. Every infectious disease is due to a specific germ or "microbe," *i.e.*, a small living organism, which living in us, and on us, as a parasite, reproduces the disease, and no other, *e.g.*, Typhoid Bacillus produces Typhoid, and nothing else, or, as it is sometimes said, "the germ breeds true"! These germs, known generally as bacteria, multiply very rapidly, so that one fever germ will produce 17,000,000 or more of its kind in 24 hours. The fever, rash, and other symptoms of the disease are the result of this growth in the blood and tissues of the body. The germs are thrown off by the patient from his skin, in his breath, in his excretions (urine, motions), discharges from sores, etc., and may infect other people directly, or be carried in various ways by water, milk, articles of clothing, etc., to those at a distance.

Stages of an Infectious Fever:—

1. Incubation or Sickening.—An interval of variable length after "catching" and before the disease "breaks out." The germ may enter the body through the respiratory system, by means of the digestive system, or through some wound or sore. Whilst the disease is hatching, and the germs are multiplying, the symptoms may be nil. Sometimes there is an indefinite feeling of uneasiness or weakness.

By knowing the length of the incubation period we know how long a person exposed to infection should be kept in *quarantine*.

2. Invasion.—The poisons which are the products of germ growth begin to show their effect on the whole system. Fever, with various special symptoms, attended with more or less bodily prostration, appear, and the rash (if any) breaks out (stage of *eruption*) after a period varying from a few hours to several days. The disease runs a definite course—though varying widely in severity in different subjects—of days or weeks according to the particular infection.

3. Defervescence or Decline.—There is a return to normal temperature suddenly [by *crisis*], *e.g.*, acute pneumonia, or gradually [by *lysis*], *e.g.*, typhoid fever. Great care is necessary at this stage to avoid complications, *e.g.*, heart-failure in pneumonia; relapses, *e.g.*, typhoid fever; or after-effects, *e.g.*, kidney disease in scarlet fever.

4. Convalescence.—May be said almost to commence with the return of the temperature to normal—provided there are no complications—and is the state of regaining the natural health and strength. Care is necessary on account of risks from possible rear-guard attacks, and an abundance of easily-digested food, sleep, and rest, is generally required to repair the ravages of the disease.

Infectious diseases frequently spread owing to lack of attention to slight cases, these not being recognised as infectious. During epidemics, or if cases of infectious disease are known to be prevalent in school or elsewhere, any "sore-throats," "nettle-rash," "influenza colds," etc., should at once receive attention and medical advice obtained.

The length of the stages varies in the case of the different kinds of microbes. One attack of an infectious disease usually protects the patient against a second, though very susceptible persons may have three or four attacks of the same disease. Isolation in the house can seldom be done properly, and entails injurious confinement during convalescence whilst the patient is yet infective.

Measles.—Starts as a "severe cold" with sneezing, running of eyes and nose, sore throat, and dry, perhaps croupy, cough. The blotchy, purplish-red rash appears on the 4th day of illness, first on the face, then over body. It begins to fade on the 7th or 8th day, when the fever usually declines. The very fine peeling of skin following rash is infectious. There is always a danger from complications, viz.: bronchitis, inflammation of lungs, ear disease. Therefore during illness child should be kept warm in bed, and be carefully nursed. After measles there is a tendency to enlarged tonsils, adenoids, running ears, sore eyes, enlarged glands in neck, chronic debility, bronchitis, consumption. Therefore during convalescence child should be protected from chills, and other children from it. Keep patient in bed until cough has gone, and for a week after rash has left. Proper care at time of attack will often prevent years of after suffering, loads of worry, pounds of expense. Never forget that measles in infants is *not* a trifling disease, it is **very dangerous,** especially to young (under 3 years), weakly, and rickety children. The duty of the mother is, therefore, to **isolate** the case at once—*before the rash appears*, for in the interval the child may have infected hundreds of other children. Schools in this way provide the chief centres for the spread of this disease; TEACHERS, therefore, should be taught to RECOGNISE SUSPICIOUS SIGNS of such infectious disease in their scholars. Incubation period—12-14 days; isolation—2 or 3 weeks; from school—4 weeks after rash appears.

Scarlet Fever.—Sudden onset with shivering, fever, vomiting (often mistaken for a bilious attack), perhaps convulsions, or croupy cough. The face is flushed, throat is sore and red, glands in neck are swollen, tongue is at first furred, then becomes a bright red with raised points on it like a "strawberry." A scarlet rash appears in 24 hours on the chest, and rapidly spreads to limbs and over body. Later the skin peels in flakes or in a fine scurfy manner, the hands and feet clearing last, the time taken averaging 6 weeks after onset of illness. Complications may be severe—the KIDNEYS are specially liable to suffer, and so cause pallor and dropsy, therefore care of the child during convalescence is necessary, viz.: avoid chills, adopt a milk diet, eschew meaty stuffs, attend to bowels, and keep skin active by daily warm bath; the EARS may suffer, therefore attend to nose and throat during illness to prevent ear infection, and **do not neglect a running ear**—try to get it well quickly, else the child may die, or be struck deaf and dumb. Some cases are very mild and have little or no rash. Such cases are apt to be overlooked, yet they are most dangerous to others for they *may convey infection* which kills.

Incubation—2-8 days; isolation—6 weeks (average); from school—until all discharges and peeling have ceased for one week.

German Measles.—Symptoms are those of measles without "cold." The sore throat is like that of mild scarlet fever, the rash appearing on the first day is blotchy like measles but brighter, less often it resembles the scarlet rash. The feature of this harmless hybrid of disease is—much rash, little illness. But distrust your own opinion, **isolate at once**, and seek medical advice. Incubation—12-14 days; isolation—2 weeks; from school—3 weeks.

Influenza.—Is very infectious, and variable in type and severity. Debility is often great, lung and nervous complaints are common.

Diphtheria.—Onset less sudden and severe. There is indefinite illness, headache, perhaps pallor, sore throat with patches of membrane on it, and swollen glands below jaw infected from it. The nose may discharge—a suggestive sign, and if the disease extends down the throat the child may develop a croupy cough and difficult breathing. Diphtheria is a **very dangerous** disease, and *early diagnosis is of supreme importance*, so that remedial antitoxin may be injected without delay. The commonest complications are—inflammation of the lungs, HEART FAILURE (early and late), and PARALYSIS. Any child who has had sore throat, and who 2 or 3 weeks afterward is noticed to squint or to have defective sight, or to talk through the nose, or to have difficulty in swallowing or walking, should be referred at once to a medical man for examination. The disease is spread by contact, licking slates or pencils, using same towel, &c. Mild cases may escape detection. Incub.—2-3 days; isol.—2 or 3 weeks; from school—get medical certificate, 1 month if no complication?

Whooping Cough.—Starts like a feverish "cold," with a dry, convulsive cough which comes on in sudden spasms. In a few days the typical "whoop" is heard—a sound caused by the child drawing in its breath (inspiration), after a suffocating spell of coughing (expiration). The cough may be accompanied with vomiting, bleeding of the nose, bloodshot eyes, &c., and often causes a peculiar puffiness of the face, and a "tooth" ulcer under the tongue. The disease is very **fatal to young children** (under 5 years) on account of the lung complications—bronchitis and inflammation, and later, consumption. Therefore infants should be protected from infection, and parents ought to guard patient from chills, and prevent the disease spreading to others. TEACHERS SHOULD NOTE that when whooping cough is about, children suffering from a "cold in the head" should be kept home from school and apart from other children. Incubation—14 days; isolation—21 days; from school—6 weeks at least, until bronchitis and whoop have gone.

Mumps.—The child gets ill and feverish, and at the end of a few days complains of stiffness, aching, and tenderness at the back part of the lower jaw. A swelling appears on this side of the face in front of and below the ear, due to the inflammation and enlargement of the large gland (parotid) in this position. Both sides may be affected and swallowing prove difficult. Incubation—14-21 days; isolation—2 or 3 weeks; from school—until swelling and pain quite gone.

Chicken-Pox.—The child is ill and feverish for about 24 hours before the rash appears. This consists at first of pimples, which rapidly change to watery blisters, which in turn become "mattery," and in a day or two dry to scabs or crusts. The rash is seen on the face, scalp, and body, and comes out in successive crops for 4 or 5 days, so that all stages from pimple to scab can be seen varied on the same patient at the same time. The disease practically commences with a rash which soon develops this mixed character. The disease is *not unlike a mild case of small-pox*, and if this is prevalent, medical advice must be sought at once as a **diagnosis may be as difficult as it is important.** Incub.—12-14 days; isol.—2 or 3 weeks (till scabs off); from school—till all scabs are off.

Small-Pox.—Severe headache, backache, legache, vomiting, feverishness, and "cold shakes," perhaps drowsiness in children. Rash appears on the third day as red pimples, first on the face, wrists, and hands. The spots become blisters, pustules, and scabs by the tenth day. Small-pox is *very rare in vaccinated* children; it is **very fatal to unvaccinated** children. Incubation—12 days; isolation—many weeks (till skin clear)? from school—fortnight after scabs off.

Typhoid Fever.—Insidious and deceptive onset: languor, headache, feverishness, loss of appetite, diarrhœa (pea-soupy), &c. At first commonly mistaken for some stomach disorder in the child, and for influenza in the adult. The disease is very dangerous, especially during third or fourth weeks, and if care is not taken early, so that the patient should, even in the mildest case, be confined to **bed at once,** and kept on **strict diet** over a long period. Careful nursing is necessary, and, be it noted, infection is conveyed chiefly by the stools that have soiled patient or clothes, utensil or w.c. Incubation—7-21 days; isolation—until recovery; from school—until well and premises have been disinfected.

Owing to the frequency of complications in cases of infectious disease, parents neglecting to place their children under medical care act very unwisely.

Nursing Notes.—Quarantine the child directly illness appears. Choose the largest, sunniest, most secluded room, preferably at the top of the house, because infection rises with the hot air. **Strip it** at once of all unnecessary furniture, rugs, curtains, valences, pictures, ornaments, &c. Remember all these *harbour germs* and will afterwards REQUIRE DISINFECTION. Better bare rooms now than infectious disease later. Keep the room thoroughly **ventilated**; fresh air is the *best disinfectant and deodoriser*—germs thrive on foul air; fresh air for lungs is as necessary as good food for stomach—fresh air is the best "blood purifier" and "health restorer." The emanations from the sick are as smoke from fire, and require a flue for escape and a fresh air flush,—their retention means suffocation and poisoning. Keep a thermometer in the sick-room and maintain the temperature at 60-65°. If the patient feels cold mend the fire, or try an extra blanket or a hot bottle before closing the window. In laryngitis or bronchitis a steam kettle may be ordered to moisten the air. PERFECT CLEANLINESS IS ESSENTIAL. Realise that **Dust** is not merely dirt but danger, indoors and out, therefore move and remove it, using a damp duster. Sprinkle floor before sweeping.

All discharges (excreta, &c.) should be immediately disinfected, covered up, and removed from the room. Soiled linen and dressings (if not burnt) must be immersed in disinfectant solution and taken away to safe place.

See that dishes and all articles used by patient are **reserved for him alone,** washed by themselves, and disinfected. Bring into the sick-room only such food as the patient is likely to consume, and see that what he leaves is *not used by others.* In the sick-room wear a cap and large washable overall which can be slipped off before leaving the room. The hands should be kept well washed aud disinfected. Limit the attendants on patient to one or two; exclude cats and dogs; visitors should only be allowed in case of serious illness. They must not touch patient or bed, or sit between patient and fire, and should take a brisk

walk in open air before mixing with other people. A sheet kept wet with carbolic lotion and hung outside the door is *no real precaution* against the spread of infection. Regard it more as a "danger signal," and as a warning to intruders! It may serve to give the hands a disinfecting wipe.

With regard to patient. It is important that the skin be kept clean and its action encouraged. For skin excretes poisons which are dangerous to patient and infectious to others. **Sponge** the patient **daily** with warm water to which a little Sanitas may be added. Complete one part, *e.g.*, leg, before exposing another. Remember in TYPHOID FEVER the danger of *bed sores*. Do not stifle the patient with clothes; when the fever is high, light covering in cool air is advantageous. In fact, in high fever the doctor may order cold applications to skin.

In any fever digestion is impaired, therefore "little and often" of liquid foods will probably be the doctor's orders. NEVER GIVE SOLIDS OF ANY KIND WITHOUT ORDERS—*you might kill a typhoid patient.* All food must be light and nutritious such as milk and water, bread and milk, bread and butter, gruel, broths, custards, jellies, light puddings, such as those made of milk, rice, bread and butter, &c.

It is *not* harmful to give the thirsty patient drinks of cold water or barley water with freshly made lemon juice—they can only **do good** as food, comfort, refreshment, and medicine to lower fever! Toast water, home-made lemonade, or the sucking of ice, will safely allay the thirst while the patient is feverish.

A little linseed tea, (prepared by adding to a pint of water, 2 tablespoons of whole linseed, half a lemon sliced, a piece of liquorice the size of a nut, boiling for 1½ hours, straining and sweetening to taste) often allays a slight cough, but if the cough is at all troublesome, or if the throat is sore, or there is anything the matter with the eyes, nose, or ears, a doctor should always be called in.

Attend to the cleaning of the **mouth** and **throat,** and to all parts, *e.g.*, ears and eyes, where discharge or soreness exists. Swab out the mouth (tongue, teeth, and gums) with Sanitas (tablespoonful) and warm water (wineglassful) after each meal, and afterwards smear the gums with glycerine of borax. With a clean mouth there is less fear of sores, difficult feeding, throat or lung complication. When painting or swabbing the throat in DIPHTHERIA be **on guard** against patient coughing, and stand a little to one side. The expectoration is highly infectious; the conveyance of infection to the nursing mother confers no benefit on her sick child. Burn all swabs immediately after use. If **eyes** are inflamed wash them frequently with warm boric lotion (a teaspoonful of boric acid to a pint of water), and if lids stick together with discharge smear edges with clean vaseline (or boric ointment) on clean finger after bathing eyes. If eyes are sore or sensitive it may be well to darken the room between times. If **ears** run, syringe and dry, afterwards using prescribed healing drops or drying powder as ordered. If **nose** discharges it may be necessary to syringe it. Use a straight, strong syringe (same for ears), and some warm cleansing solution (see

Ears and Nose) afterwards smearing inside nostrils with vaseline applied on cotton wool twisted round a wooden match. Teach child how to blow its nose, and to use a soft rag to be burnt after soiling. The *cleaner* and *clearer* we keep the nose and throat the less fear there is of ear inflammation, *viz.*, earache and discharge. **Earache** signifies **danger**, therefore treat it with respect. To RELIEVE PAIN use warm drops of laudanum, and prolonged applications of hot wadding sprinkled with a few drops of chloroform; to PREVENT INCURABLE INJURY to ear seek *expert* advice—an operation may be necessary.

Every kind of mattery discharge is infectious; take particular **care** with regard to **sputum**. Let patient spit into carbolic lotion in a cup which can be disinfected, or on to a piece of rag which can be burnt afterwards. Note danger to nurse from soiled clothes (bed or patient) in a case of typhoid fever—change at once after soiling, for in 24 hours they will become a focus of, perhaps, fatal infection. After use of bed pan, &c., **never forget** to scrub the hands, preferably in running water, and to soak them in an antiseptic solution.

Bed Sores.—These are apt to form when patients have to lie in bed for a long time (*e.g.*, in typhoid fever), or are stout (because of weight), thin (bones press on skin unprotected by pads of fat), old (skin weak, soon gives), unconscious or paralytic (little movement, therefore constant pressure on one part), wet or dirty (unable to hold water, etc.—skin sodden, irritated, and germ infected), or badly nursed—this is the **chief cause**. To prevent bed sores the bottom of the back should be washed with soap and water twice daily, dried thoroughly, then well rubbed with methylated spirit (to harden the skin), and finally dusted over with a drying powder, *e.g.*, boric acid and starch, equal parts. If parts liable to be kept wet use a simple ointment (*e.g.*, boric) instead of powder. Keep the sheets smooth and free from crumbs; remove at once wet or soiled clothes; provide double-folded sheets (or square of macintosh) or pad of cotton wool under buttocks, or let patient lie on *air* or *water* bed. Turn patient regularly to avoid constant pressure.

Sponging may be used to reduce fever. It may be ordered tepid, cold, or iced. Remove nightdress, and place a blanket over patient; have at hand basin of water, sponge, and soft dry towel. A portion such as one arm, or the chest, is sponged at a time; dry by dabbing each part as sponged; do not wet the bed with a dripping sponge; do not fatigue the patient. Tepid sponging is soothing in fever, and 15 minutes may be taken. Ice-cold sponging should not exceed 10 minutes for fear of shock to patient. The thermometer registers the result on the temperature, and the sponging should be repeated according to medical orders.

Wet Packs.—Cold or hot. These necessitate the use of a large macintosh sheet spread over bed, and wrapping up the bare patient in a sheet or blanket wrung out of water of varying temperatures. If the fever is very high the cold wet sheet may have to be reapplied in 10 minutes, or sprinkled with cold, perhaps iced, water from a sprinkling can! Again the thermometer registers the need for renewed cold to reduce fever. A more convenient domestic way of treating high fever (by cold applications) is to wring out in iced water lumps of sheet wadding, and to apply them to armpits or groins as often as may be necessary.

Forget the bogey of traditional prejudice! Seek instruction and explanation from your doctor; learn from him how to take the temperature, pulse, and respiration, and how to record them, for you may thus render your patient invaluable service. Seek from him how to carry out *exactly* the nursing instructions he gives you; if in any doubt, ASK! Nursing is an acquired art—not a maternal instinct.

Disinfection.—Infectious fevers are caused by microscopic parasites known as germs, or bacteria, which grow in us, and attack particular parts, *e.g.*, throat in diphtheria, but also cause a general illness by the poisons they create and pour into the blood. The specific germs of the disease are given off by the patient, who thus infects the room he occupies, and becomes a source of danger to all around. This infection is transmitted by different fevers, in varying degrees, by the breath; by all discharges from mouth, etc., or sores; from particles of skin, or scales and scabs, and secondarily from slates, books, pencils, clothes, &c. A mother should know how infection is spread, and how to prevent its spread; what steps she should take to ensure the safety of herself and the community. A disinfectant is a **poison** that kills germs; a deodoriser which destroys smells is not necessarily a disinfectant. The air of a sick-room cannot be charged with any effective amount of germ killer while it is occupied. To expose about the room stuffs in saucers may serve to calm fears but *it does not disinfect a room!*

Disinfectants may be classed as follows:—1. Dry Heat.—Fire. Burn rags, refuse, etc. 2. Moist Heat.—Boiling, exposure to steam. 3. Certain Gases.—Sulphur fumes, etc. 4. Chemicals in Solution.—For excreta, soiled linen, etc. 5. Dry Earth, etc. 6. Fresh Air and Sunlight.

A solution of Condy's fluid, permanganate of potash, or carbolic will kill the the germs IF THESE ARE SUBMERGED in it, and you comply with these conditions: (1) intimate admixture of noxious substance with the disinfectant in (2) *sufficient* quantity, (3) *sufficient* strength, and (4) for a *sufficient* time. Disinfectants vary in efficiency; only use those that possess a guaranteed character as germ-killers; as a rule it is advisable to allow 15-30 minutes' contact before considering disinfection complete. Disinfectants recommended:—Carbolic acid (1 in 20*) and corrosive sublimate [1 soloid to a pint of water=1 in 1000]—useful for disinfecting hands, urine, &c.; Jeyes' Fluid, Izal, or Lysol (1 or 2 teaspoonfuls to a pint of water—weaker for skin, stronger for typhoid motions or urine). If bleaching-powder is used see that it is FRESH and STRONG.

1. All **bed** and **body linen**, &c., used in sick room carry infection and should be steeped for one hour in solution of *carbolic acid* ($\frac{1}{4}$ pint No. 4 to 1 gallon of water) or *formaline* (2 ounces in one gallon of water) before removal from room, and be afterwards **boiled** for 15 minutes. Note that boiling without soaking in cold water fixes the stains of blood.

2. Disinfect by boiling when possible—bedding, crockery, spoons, etc.

3. **Burn** at once all soiled rags, swabs, dressings, &c., and afterwards burn all useless or inexpensive articles, *e.g.*, books, toys, which cannot be readily disinfected. Remember that in SCARLET FEVER (scarlatina) infection may hang around these for years, and then infect those who use them. So note, a fire serves two purposes in a sick room—as a CREMATOR and as a VENTILATOR.

Care must be taken that all clothes, toys, etc., used during the *incubation* period of a fever are collected and burnt, or disinfected.

4. All **slops** and matters passed from patient should be disinfected by the addition of diluted, cheap, crude, dark-coloured carbolic acid sold for this purpose. Cover, remove from sick room, allow to stand

*Two tablespoonfuls to one pint of water. In disinfecting motions, urine, etc., an equal bulk of double strength of disinfectant should be used.

for an hour, then empty into the closet—NOT INTO A SINK. The vessel containing them should afterwards be washed, and the pan of the closet scrubbed, and well flushed with some disinfecting solution. In emptying the slops care should be taken to avoid soiling the seat of the closet, and if it be accidentally soiled it ought to be carefully cleansed and disinfected. In the country the greatest care should be taken to prevent the contamination of WELL OR DRINKING WATER by any discharges from the sick person. In **typhoid fever** and cholera this is particularly **important.** Where a garden is available, the disinfected excreta should be buried a foot deep in the soil remote from pump, well, or stream supplying drinking water. Without proper closet accommodation, &c., it may be necessary to mix them with sawdust and paraffin and burn them, and to treat old mattresses, pillows, &c., in the same way. In midden towns typhoid stools may be put into special pails with sawdust, acid perchloride of mercury, green copperas, or other disinfectant. If put into a midden this must be well cleared, scraped, and treated with chloride of lime, else the disease will certainly recur in the same house.

On recovery from an infectious disease, a **final cleansing and disinfecting of sick room** and its **contents** is necessary. Except in scarlet fever and small-pox it will generally suffice to give everything a thorough WASHING, CLEANING, and AIRING. The bedding and clothes are hung over the chairs and bed, the windows and doors are thrown wide open, and the fresh air allowed to blow through the room for 48 hours—after which the child's bed and body linen should be well boiled in the copper, and the floors, window sills, and other horizontal surfaces of the room scrubbed with plenty of soap and water, to each ordinary pailful of which a small teacupful of *formaline* may be added.

The **patient,** after being well washed with soap and bathed, is to be clothed either with garments that have never been in the sick room, or with clothes that have been thoroughly disinfected at the Disinfecting Station.

Should fumigation be necessary it had better be done—it may be compulsory—by the sanitary staff of the Public Health Authority, who will also remove articles of bedding, clothing, &c., and have them disinfected efficiently by hot air or steam apparatus at the Disinfecting Station. Unless this process of disinfection is effectually carried out, the sick room cannot be safely occupied except by an immune person. Should the occupier do the fumigation with sulphur, let him proceed as follows :—remove any bronze, gilt, copper, &c. articles ; spread out and hang upon lines all articles of clothing and bedding ; wet walls, floors, and articles with watering can ; well close the fireplace, windows, and all openings by sealing them over with brown paper and flour paste ; then take 2lbs. of brimstone (for room of average size) broken into small pieces, put this into an iron dish, pan, or bucket, supported on bricks over a pail of water, and set fire to the brimstone by putting some live coals upon it. (A better plan, perhaps, is to use tins of compressed sulphurous acid gas). Close the door and stop all crevices on exit as before, and shut up the room for 24 hours. Enter room with wet towel soaked in solution of washing soda over mouth, and open windows. Ventilate freely for 48 hours as before, keeping large fire burning ; then limewash ceiling ; strip paper off walls and burn in room ; scrub all wood, paint-work, and horizontal surfaces with hot water and soda ; afterwards washing them over with some disinfectant in solution, using a large paint brush.

To cleanse and disinfect waste pipes of lavatory basin, baths, and sinks—close outside ends opening over gullies, and fill pipes with a sufficiency of strong hot solution of caustic soda to dissolve grease, soap, and dirt lining the pipes.

Attention is particularly directed to the following provisions of the Sanitary Laws in reference to "INFECTIOUS DISORDERS."

1.—The owner or occupier may be required to cleanse and disinfect any house or room, or the cabin or berth of any ship or vessel, and the articles contained in it likely to retain infection—where infectious disease has existed—under a penalty not exceeding 10s. a day for neglect.

2.—If any person, suffering from any dangerous infectious disorder, shall enter a cab or other public conveyance without informing the driver thereof that he is so suffering, he shall be liable to a penalty not exceeding £5.

3.—Any person suffering from any dangerous infectious disorder, such as fever, scarlet fever, small-pox, etc., who exposes himself in any street, school, church, chapel, theatre, or other public place; or in any omnibus or other public conveyance; and any person in charge of one so suffering who so exposes the sufferer shall be liable to a penalty not exceeding £5.

4.—**School Attendance.**—No child who has been suffering from an infectious disease, and no child residing in a house where such disease exists, is to be permitted to attend school without a certificate from the Medical Officer of Health or the Medical Attendant that the child is free from infection, and that the house has been properly disinfected. Parents and guardians not complying with this provision are liable to a penalty not exceeding £2; as are also school teachers who permit children to attend school unprovided with such certificate.

5.—Any person, who, without previous disinfection, gives, lends, sells or moves to another place, or exposes any bedding, clothing, rags, or other things which have been exposed to infection, becomes liable to a penalty not exceeding £5.

6.—Any person who lets a house, room, or part of a house, in which there has been infectious disease, without having such house or room and all articles therein liable to infection, disinfected to the satisfaction of a qualified medical practitioner, is liable to a penalty not exceeding £20. This applies to public houses, hotels, and lodging-houses.

7.—**Removal to Hospital.**—Persons suffering from any infectious disease, and without proper accommodation, or so lodged that proper precautions cannot be taken to prevent the spread of the disease, may be removed to Hospital.

8.—If any person who lets, or shows for hire, any house, or part of a house, makes any FALSE STATEMENT as to the fact of there being then in such house, or having within six weeks previously been therein, any person suffering from an infectious disease, such person ANSWERING FALSELY shall be liable to imprisonment, with or without hard labour, or to a penalty not exceeding £20.

9.—Any person who shall knowingly cast, or cause or permit to be cast, into any ash-pit, ash-tub, or any other receptacle for the deposit of refuse matter any infectious rubbish without previous disinfection, shall be liable to a penalty not exceeding £5.

DISEASES OF ORGANS OF RESPIRATION.

Croup.—This is an affection of the larynx, or voice-box, which is felt in the throat as "Adam's Apple." In the voice-box are the two vocal cords which vibrate so as to produce the voice. Between these cords is a fine chink called the glottis. Any swelling here, the result of inflammation, or any obstruction like membrane in diphtheria, will easily close the chink and suffocate the child. The croupy "stridor" is due to the sucking of air through this narrowed passage in the act of breathing. Its distorting effect on the chest is the same as that produced by blocking of the air tubes in bronchitis, or, in fact, by any impediment in the air-way from nose to lung, viz., adenoids, enlarged tonsils.

Any croupy cough or stridor should excite alarm, and ring a call for medical help. Croup is either simple or **serious;** it may mean a nervous spasm, a cold or **diphtheria,** or the onset of MEASLES or SCARLET FEVER. In simple croup ("false" or "spasmodic" croup) the child may have shown signs of a slight cold, and a cough which becomes barking towards evening. During the night, he suddenly develops an "attack of croup" of an alarming character. This may be repeated for 2 or 3 nights. The child often suffers from rickets, enlarged tonsils, adenoids, or indigestion,—causes of croup demanding medical treatment.

Serious croup is attended by feverishness, rapid pulse, and a dry, crowy cough, and the child is more composed and resigned. If the breathing becomes more noisy and laboured, and the child darker in colour and duller—BEWARE—it is *membranous* croup, bad diphtheria—and injections of antitoxin may save your child provided you do not delay too long. Should a sick child develop croup for the first time, especially if infectious disease is about, particularly diphtheria, **isolate at once,** and seek medical aid, for it may be necessary to inject antitoxin, or even to perform an operation (tracheotomy) should breathing become very difficult. The same advice of *isolation on suspicion* applies to all cases of sore throat until certified as non-diphtheritic by a medical man; mothers should remember this rule—WHEN IN DOUBT, ISOLATE, AND CALL YOUR DOCTOR.

If a medical man cannot be obtained, or the mother is compelled to temporise, she should put the child to bed in a warm room (65° — 70°) and apply to the throat at intervals, for several minutes at a time, a sponge wrung out of hot water, taking care, of course, not to scald. A kettle of boiling water should be allowed to steam on the fire—for hot, moist air relieves croup, or a bronchitis kettle may be requisitioned, or a steam tent rigged by fixing poles at the four corners of the bed and spreading between them sheets or curtains. A large open umbrella fixed to hold a sheet covering over head of bed may serve to confine the steam in the same way. One or two grains of calomel to open the bowels will help, and if the croup is bad, an emetic should be given at once to clear the larynx as it clears the air tubes in bronchitis. A teaspoonful of ipecacuanha wine may be given to a child of two, and repeated until the child vomits freely. Draughts of hot water may assist its action. Note that stimulants may be required subsequently to counteract the depression.

Asthma.—This is a definite disease, evidenced by difficulty in breathing occurring in wheezing attacks of varying duration. The term is commonly applied by the laity to all forms of difficult breathing independent of its cause. It is often due to a nervous spasm of the air tubes (*cp.*, spasmodic croup) starting from a cold, cutting a tooth, some nose, throat, or stomach irritation, *e.g.*, polypus, adenoids, dyspepsia,

and is commonly associated with bronchitis, and stretching or paralysis of the lung. A liability to catching cold, hay fever, "attacks of croup," and asthma, should always prompt *expert* examination of the nose and throat, and a careful *medical* revision of the mode of life.

Bronchitis.—This is an inflammation of the lining of the air tubes, and causes cough and phlegm, wheezing and shortness of breath, &c. It is always a serious illness in a young and delicate child, and in fat, flabby, overfed children; in rickety children with weakened muscles, softened ribs, and misshapen chests; and when complicating an attack of **measles** or **whooping cough**. Note that MOUTH-BREATHERS suffering from enlarged tonsils or adenoids are prone to contract catarrhs and bronchitis, and so are "coddled," sensitive-to-chill children, *i.e.*, those overclothed and under-aired, or housed in overheated and ill-ventilated rooms. When the cause of a disease is known, measures can be taken to prevent it, or, at any rate, to lessen its severity.

Note.—Children under 5 years do not expectorate; they swallow their phlegm. The bowels should, therefore, be kept regular so as to discharge the secretion *vice* coughing. Should the bronchitis penetrate deeply, and the sputum be tough and thick, it may stick in the little tubes, block the air-passages, and choke the child. The impediment to air entering the lungs is evidenced by the sucking in of the lower ribs and the pit of the stomach, and the spaces above the collar bones and chest bone. The child's colour darkens through asphyxia, and an increasing dulness or stupor results from this poisoning by the impure, non-aerated blood. Skilled nursing under expert medical advice is now of enormous advantage. Warm, moist air softens the phlegm and assists its expectoration; therefore use a bronchitis kettle, and keep the temperature of room at 65°. **Admission** of abundant **oxygen** is necessary, and so is **free elimination** of the super-abundant **carbonic acid gas** which is poisoning the patient; therefore maintain **free ventilation,** and prohibit unnecessary people in the room who rob the *patient* of oxygen, and add *their* quota of respiratory poison. The chest must be forced to expand to its fullest; therefore avoid compressing it with heavy clothes or messy poultices; rub the chest with a stimulating liniment ordered by the doctor—it will irritate the nerves and cause deeper breathing; it will also soften the phlegm and thereby loosen the block. Vomiting empties the air tubes as well as the stomach; the doctor may therefore order an emetic in addition to his "expectorant" medicine. Keep the patient propped with pillows—it renders breathing easier. The patient is *drowning* in his own death-rattling and obstructing phlegm; oxygen inhalations and artificial respiration are useful as a last resource to accomplish what the natural mechanism is too weak to perform.

These then are the principles of nursing a bronchitis case:—To maintain the strength by rest in bed and judicious feeding, and to regulate digestion by attention to bowels, &c.; to keep clear the air-way; to supply the blood with necessary oxygen, to deplete it of unnecessary poisons; to lighten the load of respiration; to offer it artificial help in time of need; to keep the room warm, *not close;* to avoid draughts; **not** to give an indigestion, and quieten a cough, or thicken sticking phlegm by the "cough mixtures" of commercial quacks. Provided care is thus taken, bronchitis may not extend to the lungs and end in pneumonia (broncho-pneumonia), neither need the child die from tube-block, asphyxia, or exhaustion.

Pneumonia.—Commonly known as "inflammation of the lungs." It is very common in infants and young children, and although it seems to be the result of a chill, or to arise out of a common cold, it is really a specific germ disease in one form, and in another (common) a mixed infection, or an extension to lungs and a complication in bronchitis.

The small bacteria which cause the disease are often present in the mouth and nose of a healthy person, and from here they can be inhaled into the lung and set up the disease. It must be evident, therefore, that *cleanliness of the mouth* is of paramount importance in preventing pneumonia in the well, and, as a complication, in those sick of a disease like influenza or typhoid fever.

There is high fever, painful cough (pleurisy), with difficult and rapid breathing, and more or less bronchitis according to the kind of inflammation. The attack may end in sudden recovery in a few days (2 to 7), or, if it be of the BRONCHIAL type, a serious complication of whooping cough and measles, it may last 2 or 3 weeks (or much longer), or become chronic with much wasting, and even drift into consumption. Pneumonia is often complicated by **pleurisy**; if the pneumonia complicates a disease like scarlet fever, this complication may give rise to an abscess on the lung (empyema) requiring operation to let out the matter. If recovery is delayed after an attack of pneumonia, especially if the child keeps very pale and thin, and sweats at night, the doctor may suggest exploring the chest with a needle to see if matter is present over the inflamed lung. Do not withhold your consent, for the sooner the abscess is discovered and drained, the sooner the child will recover, and the less likely is any permanent defect to occur.

Nursing Notes.—A child suffering from any form of pneumonia must be kept at rest in a warm (about 65°), **well-ventilated,** yet non-draughty room. Exercise extreme care in the early hours of the morning. Keep him **quiet,** and do not let him sit up, talk, or see visitors. The diet as in all states of fever should be light, liquid, and nourishing—milk, Benger's food, beef tea, &c. Do **not** overload the stomach; do **not** disallow cold drinks. See that the bowels are opened regularly and sufficiently; see that the skin is kept active by daily tepid sponging; take precise notes from your doctor concerning the giving of medicine, stimulant, or food; do not awaken the patient without orders; do not think that poultices cure pneumonia—at most they can only relieve cough and pain; on the other hand, they **may be harmful** if heavy or carelessly applied. It may be a good plan to divide the nightdress (which should be flannel) down the front and attach tapes for tying; this device renders access to the chest more easy and lessens movements of the patient. **Remember** that a jacket of cotton wool or gamgee is generally better for infants than heavy poultices. If the fever is high, and pain great, do not accuse your doctor of "attempted murder" should he order an ice bag to the chest, or to the body a cold sponge! For the application of cold in high fever marks an advance in medical treatment. During convalescence, the child should be carefully clothed and fed, and the damaged lungs strengthened by exercise in the open air, preferably at the seaside or in the country.

PRACTICAL INSTRUCTIONS.

Linseed Poultice.—Have ready a kettle of boiling water, some muslin or old linen the length required, sheet wadding or tow, linseed meal, basin (milk or pudding), knife, and two hot plates. First rinse the basin and wet the knife with *boiling* water, and pour into the basin sufficient boiling water, say half-a-pint, using more water the larger the poultice required. Take a handful of linseed, and sprinkle it quickly into the water whilst stirring with the knife in the other hand. Experience only will teach you the quantity necessary. When firm enough to leave the basin in a dry, putty-like state turn out on the linen, spread quickly and evenly, about half-an-inch thick, leaving a margin all round of about an inch to turn over and retain the meal in a sort of case. Then roll it up, place between the hot plates, and carry to patient. Always apply as hot as possible, but **do not burn the patient.** Scalds may result from the poultice being too wet. Always test the heat by applying poultice to back of hand. If any sticks to the skin it is badly made. Apply very lightly to part until the heat has become bearable. Some prefer to smear the skin with vaseline before applying the poultice, or to sprinkle a few drops of oil on to the poultice. The heat then seems to be more easily borne. After applying the poultice over the part, **cover** it with a thick layer of hot sheet wadding (to retain the heat), and fit in place with a rib bandage, or strips of old flannel about a yard long, and 5 inches wide, fastening with safety pins. Prevent a chest poultice slipping down by shoulder straps of flannel safety-pinned to wadding, back and front. Change the poultice every 3 hours, or according to instructions. To be effective poultices can scarcely be changed too often.

To make a Pneumonia Jacket.—Use cotton wool or gamgee ; it is generally better than large poultices for infants, for it is lighter, less messy, less trouble to apply, better to fix, requires less changing, and involves less risk of a chill. Shape front and back pieces like chest protectors, and fasten over shoulders and at sides with safety pins or pieces of tape sewn along edges. Sheet wadding from the drapers is cheaper than cotton wool from the chemist, but is not so comfortable as it is non-absorbent.

Jacket Poultices.—Make as above in two halves, and cover with a pneumonia jacket and flannel bandage as before. Spread this poultice thinner as a heavy poultice is tiring for the patient, and on a child will prevent proper expansion of the chest, and therefore cause congestion of the lungs and difficult breathing. Unless an expert nurse has charge of the child it is **better not** to poultice the chest ; in fact the objections to the use of poultices in children's chest diseases are so weighty that the writer has discarded them in favour of stimulating liniments and a cotton wool jacket. *To hamper the breathing of a bronchitic child is to court disaster.* **Note.**—The skin of a child is delicate, and is readily burnt or irritated into rashes by poultices, liniments, etc.

Mustard Poultice.—Make the mustard into a paste with warm water, then mix thoroughly with the linseed in the basin before spreading. The usual strength ordered is 1 spoonful of mustard to 4 of linseed meal.

Mustard Plaster.—Make a thickish paste of mustard (1) and perhaps flour (1 to 5) with tepid water. Spread on brown paper, and cover with muslin or tissue paper, leaving a margin to turn over to prevent running, cover with cotton wool (absorb wet, prevent mess), fix with strapping or bandage. Apply and leave till redness is produced —5 minutes (children) to half-an-hour (adults). **Mustard leaves** act more strongly, therefore do not leave on so long. Avoid raising a blister or breaking the skin, as a mustard sore is painful and difficult to heal. Wet the leaves thoroughly before applying.

Fomentation.—Place across a basin a large towel, or kitchen roller, or two towels stitched together at ends, with sticks at each end for twisting purposes. In the centre place a piece of coarse house flannel (or old blanketing) four-fold thickness and of sufficient size. Over this pour boiling water until soaked. Fold the towel over the flannel, and wring it out as dry as possible. Apply the flannel to the ordered part, cover by an inch free margin with macintosh or jaconet, then with hot wadding, and fix with bandage. Change often, *e.g.*, every 15 minutes ; have fresh one ready to replace old ; never weary or expose a patient unnecessarily. The doctor may order the hot flannel to be sprinkled with laudanum, belladonna, &c., or turpentine **(turpentine stupes)** ; sprinkle required amount from a bottle with a cork with a nick cut on each side of it.

PREVENTION OF CONSUMPTION.

1. Consumption is a **preventable disease** which is partly infectious, and is caused by minute living germs, called "tubercle bacilli," which usually enter the body with the air breathed. Tuberculosis causes *one death in eight* in this country, *i.e.*, some 70,000 annually in Great Britain, and of all deaths in the United Kingdom between the ages of 25 and 35 *nearly one-half are due to consumption.* It is calculated that in Great Britain at least $\frac{1}{4}$ of a million are suffering from it.

2. The germs are found in vast numbers in the phlegm, spit, or expectoration of a consumptive person. When this matter dries, the **dust particles** blown about carry the germs, which are thus inhaled by anyone breathing the air; or they may fall upon **milk,** or other foods, and gain access to the body with that food.

3. It is dangerous to sleep with a consumptive. The breath of a consumptive is free from infection except when coughing (*bacilli abound* in sprayed droplets). If his spit is destroyed or disinfected *before it dries,* there is practically no danger to others of infection.

4. The consumptive must, therefore, not expectorate about the house, nor on the floor of any cab or other conveyance. **Spitting** about the streets, or in any public buildings, is a **dangerous** and **filthy** habit.

5. When out of doors, a small, wide-mouthed bottle (with a well-fitting cork) or a pocket spittoon (obtainable from any chemist) containing some liquid disinfectant should be used. Contents should be emptied down the closet or drain (**not** upon the ashpit, footwalk, or roadway). If a paper handkerchief or piece of rag is preferred, this must be placed at once in a waterproof bag, and the bag (like spittoon) boiled for 10 minutes daily before cleaning. Ordinary handkerchiefs, if ever used for expectoration, should, *before they dry,* be boiled for half-an-hour and then washed, or put into a solution of disinfectant as directed by the doctor. Indoors, expectoration should be received into small paper bags and **burnt** immediately; or into a spittoon containing disinfectant (carbolic acid, 1-20=2 tablespoonfuls to 1 pint water), which is emptied down the drain daily, and then washed with boiling water.

6. A consumptive must not swallow his phlegm—it may infect internal organs. When coughing, he should always hold his handkerchief in front of his mouth, and turn the head aside from another person. He should not soil his clothes or person with the phlegm.

7. A consumptive must not kiss or be kissed on the mouth.

8. A consumptive should sleep alone, and, whenever practicable, occupy a separate bedroom. *Children should not sleep in the same bedroom* as the patient. No chimney should ever be blocked—it is the best ventilator, and the WINDOWS should always be WIDE OPEN, except when dressing or undressing; arrange a screen, if necessary, to prevent direct draught. The bedclothes and body clothes should be boiled and washed separately from the clothing of other people.

9. *Sunlight* and *fresh air* are the greatest enemies of infection; they rapidly destroy tubercle bacilli, and are, really, the PRINCIPAL CURATIVE AGENTS: the more the consumptive gets the more likely is he to recover.

10. Wet cleansing of rooms, particularly of bedrooms occupied by sick persons, should be substituted for "dusting" and "sweeping." The wet dusters must afterwards be boiled. Tea leaves used on the floor should afterwards be burnt. Do not simply move dust about, *remove* it and *destroy* its dangerous infection.

11. **Never forget this**—Consumption is a disease from which large numbers of patients recover if the rooms they occupy are always kept THOROUGHLY WELL VENTILATED and CLEAN, AND FREE FROM DUST OR DRIED SPUTUM. *Public-houses should be specially avoided.*

12. Tubercle bacilli not only cause ordinary consumption of the lungs, but also "consumption of the bowels" and other parts of the body. Therefore milk and other uncooked foods should be carefully protected from contamination by infected dust or other dirt. The milk from consumptive cows (tuberculosis) is liable to contain tubercle bacilli; therefore milk, especially that used by *children* and invalids, had better be boiled or sterilised. Consumptive mothers should **not suckle** their children; the drain of nursing is, moreover, a source of **danger** to a weakly mother predisposed to consumption.

13. Rooms that have been occupied by consumptives should be thoroughly disinfected and cleansed before they are again occupied, and the carpets and bedding, etc., should be disinfected. In other words, consumption is an infectious disease which should be notified to the Public Health Authority, and the aid of their Officers sought accordingly to protect the patient as well as the community. For the patient *himself* is the *greatest gainer* by the above precautions, as his **recovery** is retarded and frequently **prevented** by renewed infection from his own expectoration. [The Disinfectant must be applied *directly to the infected surfaces* of the rooms, *e.g.*, floor, walls, ledges, etc. Chloride of Lime (1—2 ozs. to 1 gallon of water) applied by washing, brushing, or spraying, has proved satisfactory and efficient.]

14. Persons in good health have little reason to fear infection from a consumptive if the above precautions are taken. Over-work with under-feed, *intemperance*, *bad air*, *dusty occupations*, and dirty, dark, stuffy, furniture-packed, ill-ventilated rooms of damp, insanitary, over-crowded dwellings favour consumption.

15. Persons who have an inherited predisposition to the disease should, where possible, (1) choose outdoor rather than indoor occupations, and (2) live in houses situated on dry, porous soils, and protected from the prevailing winds; they should also (3) be **strictly temperate,** and (4) take precautions against contracting colds, and (5) beware of the debility following a disease like INFLUENZA, and (6) treat with respect a "simple" cough or attack of pleurisy—under medical advice.

N.B.—Any low state of health predisposes to consumption.

This modern scourge, the "White Man's Death," exists chiefly through ignorance of its infectivity, and carelessness on the part of the sufferer.

There will be less consumption when the people recognise that it is a "filth disease," and that the germ can only thrive outside the body on dirt in dark places, and invade the body when the soil is prepared for it by some hereditary or acquired weakness of the body parts.

FRESH AIR AND VENTILATION.

Ventilation by means of fresh air is most important for the preservation of health. This applies to children as much as to adults. The health importance of efficient respiration has been under-rated. Air breathed should enter by way of the nostrils, not through the mouth, for the nose is an important protective apparatus designed to warm, moisten, filter, and purify the air before it reaches the lungs. Moreover the nose smells, and is therefore a sentinel on guard to detect impure air unfit for respiration. Cold air striking the throat directly causes a disagreeable dryness and throat irritation, and in time will excite a chronic catarrh of the throat and air tubes, and perhaps disease of the lungs. The discomfort experienced from "blocking of the nose" by a cold for one night is proof of this fact.

The quality of the air we breathe is really more important than our dietary. It is therefore important (1) that the air we breathe should be pure; (2) that the lungs should be able to *take in* and use this air; (3) that the foul air expired should be removed. Proper ventilation is clean air displacing foul air constantly and steadily, without chilling or causing a draught: to keep the air in the room as **pure**—*not necessarily as cold*—as the air without. Cold air, in itself, is not harmful. Consumptives in sanatoria thrive on it; Arctic explorers do not suffer readily from chest disorders! The SUDDEN CHANGES from hot to cold, chill, irritate, and harm—causing cough or inflammation.

The breath from the lungs contains poisonous gases, and foul organic matter which putrefies and feeds germs. On the other hand, fresh air and sunlight kill disease germs. The air containing this noxious matter of respiration should be quickly removed from living and sleeping rooms, and also from work-rooms, schools, churches, places of entertainment, etc. For if not removed by efficient ventilation, the foul air is breathed again and again. We are poisoned by the products of our own living; we are as soiled as if we had washed our bodies in dirty water used by a medley of others! Not only this, but we miss our proper share of oxygen—a vital blood food; this has been used up to combine with the carbon of our bodies, (consumed in living) to form the poisonous gas we breathe out *as invisible smoke.* Want of proper ventilation, therefore, means that we are STARVED as well as POISONED; thus it is a common cause of headache, nausea, faintness, inattention—of loss of appetite, lassitude, anæmia, poorness of blood, and chronic ill-health predisposing to consumption and other diseases.

Children who do not get much fresh air are usually pale, weakly, rickety, and badly developed. They are also more liable to suffer from various illnesses, which, when they occur, are more severe than in other children who get plenty of fresh air. **Therefore it is very important that infants get fresh air**, and live in well-ventilated rooms, **never forgetting** *that the air of a room can never be pure if the room be dirty*, and that the air of rooms is rendered impure by burning in them gas or oil for lighting, heating or cooking. Babies need pure fresh air—indoors and outdoors—even more than grown-ups; and those who have most of it will be least liable to bronchitis and inflammation.

Overcrowding is dangerous and injurious to health, and should be avoided like something "catching." In order to prevent the development and spread of consumption, fresh air and proper ventilation are essential in factories, etc.,—especially where the work is associated with gaseous fumes or fine dust. The doctor should be consulted respecting the choice of occupation for the different members of a family. In New Zealand, workmen are only admitted to dusty occupations after a special medical examination, which is repeated from time to time. The doctor can best advise as to the work suited to the bodily conditions of his patient. In this way a great deal of misfortune could be prevented.

When, on entering a room directly from the open air, it smells close and stuffy—that is, when the smell of the putrescible matter exhaled becomes perceptible—the foul air contained has become dangerous and unfit to breathe. It is obvious that the means of ventilation should be studied. The general rule in ventilating is that openings low down act as inlets, and those high up as outlets. This is because the respired air in a living room is hotter than the outside air, therefore lighter, and rises. An open fire is a great aid to ventilation, especially if the flue be utilised as an outlet to exhaust the impure air near the ceiling. Every room, especially sickroom or bedroom, should have an open fireplace which should remain open, and not be blocked by stuffing or closed by register. We spend more time in our bedroom than in any other room; it is therefore necessary that the air should be as pure as possible. Windows should be made to open to the external air, and should, in fair weather, be kept open day and night unless this is forbidden by the medical adviser. Adopt the "costless" method of window ventilation by a board beneath lower sash. Certainly the crevices should not be blocked by sausage-like rolls flaming red at the meeting of the sashes! Muslin curtains collect smuts, and serve to filter air and break a draught. Therefore use them—cheap and washable, and wash often. Rooms, especially sickrooms, should be flushed with fresh air several times a day, *i.e.*, doors and windows are to be opened wide for five minutes or more, so that there is more than a simple interchange of fresh air with foul, but a total removal of foul air by fresh. The patient will take no harm if protected from draughts. All occupied rooms should be treated in this manner at suitable periods. Open spaces around buildings are necessary to allow access of fresh air. Back-to-back houses and cellar tenements are unfit for human habitation.

"Sanitary improvements which have been carried out in the city with a view to admit more pure air and sunshine to dwellings, and to lessen overcrowding, have reduced the mortality from consumption to about one-half of what it was 30 years ago, **but, to reduce it still further, the people must help themselves by keeping their rooms clean and well ventilated, and by maintaining strictly temperate habits.**"—(DR. HOPE, Medical Officer of Health for Liverpool.)

Note.—"In all forms of convulsions, especially those associated with rickets, OPEN-AIR TREATMENT is successful. The same treatment has met with great and gratifying success in consumption, pneumonia, whooping cough, and many other chest and general diseases. The mortality from bronchitis or pneumonia, so high in wasted children among the poor, results largely from poisoning by foul air in hot, stuffy, ill-ventilated, over-crowded rooms. The oxygen or ozone of the open air is a famous blood purifier, which destroys or sweeps out of the system impurities which would accumulate and kill."

("*Health Talks.*")

Principles of the Sanatorium Treatment of Consumption.

In consumption, or phthisis, the *tubercle bacilli* settle in the lung, and excite an inflammation, which is followed by ulceration, and the formation of cavities in the lung of various sizes according to the amount of destruction wrought by the disease. This progressive infection (microbic invasion), inflammation, and ulceration (destruction) is accompanied by more or less bronchitis, pleurisy, etc., with shortness of breath, pain, cough with spitting of phlegm and blood, wasting, fever, and the other signs familiar in the consumptive person. The treatment adopted in such a case is:—

(A.) ABUNDANCE OF PURE AIR AND SUNLIGHT.—This is essential; the principle is "open air" treatment: *maximum of ozone*—it is invigorating to body and destructive to germs; *minimum of microbe*—reinfection of patient made difficult or impossible; nothing of *aerial sewage*—no organic matter on which germs can thrive; nothing of *dusts of any kind*—no particles to irritate tender lungs, or to act as vehicles or "rafts" for the conveyance of germs through the air. Fresh air hunger must replace fresh air dread; the patient must be taught to live as much as possible in the fresh air, and to fear nothing fresh except VIOLENT or CHILLING draughts, for these might give him a cold in the head! Therefore protect patient by choosing suitable room, regulating windows, use of screen, etc., and keep him warm by having fire in bedroom or hot bottle in bed, or by means of extra blankets or woollen sheets.

(B.) DIET AND FULL FEEDING.—Plenty of wholesome, flesh-forming, fat-forming food. Note that not only has the diet a *direct curative* influence, but that an excess of food is required to replace the waste of tissue and strength caused by the disease; so try to make the blood cells strong to overcome the invading germs, and the patient **fat**, so that he has it stored as corn in a granary—ready for use in the time of high fever, or in the famine of indigestion, or of distressing complications. But **consider** (*a*) the extent and activity of the disease—generally fever does not prevent large quantities of food being taken; (*b*) amount below normal weight; (*c*) digestive capability—senseless "stuffing" is not desirable; (*d*) consult the patient's likes and dislikes—a patient is not an automaton, a "penny in the slot" machine; (*e*) food should also be selected for individual requirements for medical reasons; (*f*) meals should be appetising, well cooked, and nicely (temptingly) served; (*g*) three large meat meals should be taken daily, at long intervals (say 8 a.m., 1-30 p.m., 7 p.m.) and after each meal a pint of fresh, rich milk; (*h*) never take food when tired; **rest** for an hour after each meal.

(C.) REST.—Rest, good food, and fresh air, constitute the **cure**; the strength must be conserved to fight the microbe. Take the temperature, and when fever is present—*Rest* in bed. When the fever is controlled, which means that the disease is abating, take gentle and graduated exercises which should be checked by a thermometer in the hand of a medical man. Given a suitable subject with good appetite, and fairly efficient digestion, this treatment patiently applied should result in an arrest of the disease.

(D) NURSING.—Keep the skin clean by daily bathing or sponging. Let the patient wear plenty of warm, woollen clothing. If there are **night sweats** change clothing every morning. Calm if bleeding, cheer always.

SKIN DISEASE.

Ringworm.—This is due to a fungus which grows in the skin and at the roots of the hair. On the skin it is easy to cure, but on hairy parts like the scalp it is difficult to eradicate, and it may persist for months in spite of motherly care and *ordinary* medical treatment. On the skin it forms a characteristic reddish, itchy, scaly spot, which clears up in the middle and spreads at the edge forming raised rings of inflamed skin. On the scalp it spreads from the original scaly or reddish spot of infection to form one or more round, itching, scurfy patches of baldness or of stumpy remnants of broken hair. The surrounding scalp becomes coarse, dry, and scaly, and in turn it is attacked by the fungus, and its lustreless hair "nibbled at" in the same way. Later the patch may inflame and discharge matter, and IF THE CHILD BE ALLOWED TO SCRATCH, a head covered with ringworms and scabs infected by the finger will result. Ringworm is **highly contagious**, so a child once affected should *never* be allowed to attend school until microscopic examination of the hairs by a doctor proves them to be free from fungus. **Remember** that re-infection from the patient's head coverings or dressings may cause spread of the disease, so provide cotton or linen cap or lining that can be destroyed or disinfected daily. Keep the hair cut short, scrub and dress scalp every day, and **never forget** that whilst the *scalp remains scurfy*, the cure is incomplete and the *case is still contagious*.

Treatment by drugs requires infinite patience and perseverance. Remember that you have to destroy a living fungus which is entrenched at the roots of the hairs where it is difficult to reach with remedies. The attack must be **early and energetic**, *i.e.*, before the fungus can find shelter. Therefore *every mother and teacher, and every head of an institution where young boys or girls are congregated, should insist on the frequent examination of the heads to detect the earliest sign of ringworm.*

Note.—Prohibit children from wearing each others' hats or caps. When the disease is *deeply* established the only efficient treatment is that by the X-rays; the hairs with the fungus are thus caused to fall out, and simple treatment of the scalp and general health soon effects a cure. In large centres of population it would pay the school authorities to provide such treatment for poor children.

Favus.—Another fungus disease of scalp, and distinguished by the sulphury, yellow, honeycombed, thickly crusted condition. The disease may leave permanent scarring and bald patches. It is rare in England.

Head Lice.—Commonest amongst dirty and neglected children of poor classes, but perhaps contracted in school by others. The eggs from the lice are glued on the hairs and are known as "nits." Lice irritation induces scratching, this causes sore places which scab over and mat the hair with their crusted discharge; the glands of the neck get infected from the sores and inflame, and form large lumps which may "gather" and burst as abscesses. In treating such a case (1) cut off all hair with nits, and all hair within a quarter of an inch of a sore, and (2) remove all crusts by thorough soaking with soft soap and hot water, and then applying over night some mercurial ointment, *e.g.*, "twopennyworth of fresh white precipitate ointment from the chemist." Next morning

again wash the head well, and rinse it with clean water. Repeat this if necessary to soften and remove crusts, to heal sores, to kill germs introduced and scattered over scalp by scratching. When sores are healed attack the lice, and remove remaining nits from hairs by some solvent application, *e.g.*, soak the hair with paraffin oil to which an equal part of olive oil may be added. Keep it wet for 3 hours, or cover the head overnight with an oiled silk bathing cap. Then wash the whole head with soft soap and warm water. Repeat this process on 3 successive days. The nits may then be removed by combing the hair carefully with a fine-toothed comb wet with hot vinegar. Repeat the combing for several days until no nits can be found. Iron the collar of the clothes with a hot iron. Brushes and combs after use should be cleansed by putting them in boiling water for a few minutes. **Caution.**—DO NOT USE PARAFFIN NEAR A FIRE OR A NAKED LIGHT SUCH AS CANDLE OR LAMP. A safer method, perhaps, is to bathe the head well with a teacupful of vinegar mixed with a teacupful of warm water, and to keep it wet for an hour. Comb thoroughly as before. The acid in the vinegar frees the nits by dissolving the gummy substance which fixes the egg to the hair, and which prevents its being broken or rubbed off. Note that as each nit represents a prospective louse, no child can be said to be free from lice, or **pediculosis**, until all nits have been removed. To prevent contagion it is well to keep the hair cut short, especially in children under 10 years of age, whether boys or girls—the hair will grow better later through being close-cropped in early life. Lice may infest other parts of the body,—even the eyelashes. The body louse lives in the clothes, and lays its eggs there; only thorough boiling or disinfection will get rid of it there; and a hot bath (with a handful of washing soda in the water) and good scrub with soft soap will free the body.

Scabies or Itch.—This disease is due to an insect-like parasite, not unlike a cheese-mite, the female of which *burrows into the skin* and there lays her eggs. The parts chosen for the purpose of hatching are commonly the thin skin between the fingers, and the bends of the wrist and elbow. Sore places and scabs (like eczema) with *itching* in these places should arouse EARLY SUSPICIONS of the cause, for if the disease is neglected it may spread over the body, and cause general itching and scratching, discharging sores, boils, and scabs (see Impetigo), mixed with scratch marks and dark, short, fine lines which mark the course of the insect's tunnelling. This disease is **very contagious**, and is spread from infected children, clothes, towels, &c. No child should be allowed to attend school until completely cured, and his clothes have been disinfected by boiling, stoving (public health authority), or soaking in crude carbolic acid and water (a teacupful to a bucket of water).

The essentials of treatment are:—(1) To open up the burrows; (2) to kill the insect thus exposed; (3) to prevent re-infection from clothes, etc. Let the patient scrub himself with soft soap for $\frac{1}{2}$ an hour in a hot bath at night; then well rub over body sulphur ointment, and go into *clean* bed, wearing *clean* night-clothes, washing off the ointment in the morning. Adopt this treatment for 2 or 3 nights in succession, preferably under medical advice, for the remedy (*e.g.* sulphur) may itself inflame the skin and cause a rash.

Impetigo or Infectious Sore.—Often seen on the hands, face, or head—"scald head," of the poorer class of weakly children. It begins first as a pimple or water blister, which "matters," and dries up into a scab which spreads by local inoculation to form large, yellowish crusts. The disease is highly contagious, and is conveyed to different parts of the body by the matter on the finger infected by scratching or picking the sores. It often complicates the skin disorders described, in fact, *dirty, greenish crusts limited to the back of the head* are certainly of **verminous origin.** Exclude from school until the case is cured.

Note that in all skin diseases where scabs or crusts form, the first thing to do is to remove them before applying remedy to skin. Poulticing with bread steeped in boric lotion (teaspoonful to pint of water) or with starch poultices, or bathing them with the hot lotion, or soaking overnight with carbolic oil and then bathing, will remove the crusts and expose the skin to the action of the remedy, *e.g.*, a weak white precipitate ointment. Prevent scratching by use of gloves or splints.

Starch Poultice.—One teaspoonful of boric powder to one tablespoonful of good starch. Mix with a little cold water, then stir into a paste with a pint of boiling water. It should form a soft jelly when cold. If too stiff use more water. **Apply thickly** on muslin, cover with oiled silk, and fix with bandage.

Eczema.—This is a skin disease to which young children are very liable. There are several varieties, which appear in different forms, varying from a dry, scaly, itching patch of inflamed skin to a raw, wet, "weeping" surface, and from reddish irritable spots to heaped-up crusts of discharge. Any portion of the skin may become affected, *viz.*, scalp (perhaps complicating lice or ringworm), eyelids, ears (perhaps from ear discharge), opposing surfaces of skin as armpits, bends of elbows, genitals (irritating discharges, napkins, neglect, etc.) It should be noted that a baby's skin is very delicate, and that trifling causes (*e.g.*, strong soap, rough flannel) may produce severe inflammation.

When the disease depends upon some external irritation or infection as above indicated, the treatment consists in **removing the cause,** and then in protecting and soothing the skin by suitable ointment or lotion. Scratching alone may keep up a chronic eczema for years. Keep nails short and hands clean. A teaspoonful of Jeyes' Fluid to the evening bath of warm water will relieve itching. Amongst internal causes the most frequent is unsuitable food and indigestion. In the breast-fed babe the mother must regulate her diet, exercise, and bowels; in the bottle-fed the feed must be suitably adjusted to the child's age and digestive capacity.

Some forms of eczema are infectious, so the mother should seek medical treatment early. Patent medicines should never be used!

In all acute forms of eczema soap must be avoided. Use warm, soft, rain water; if not possible, water in which has been boiled, in a bag, oatmeal or bran and then strained. Olive oil applications may be useful.

Erysipelas.—Perhaps infects a wound or sore, causing fever and local redness, swelling, and spreading inflammation. It is contagious.

Children with wounds and sores round which there is swelling and redness should be sent home from school for medical advice, and if found to be suffering from erysipelas, should not return until swelling and peeling of skin have disappeared. Keep a vaccinated arm clean and dry.

EAR, NOSE, AND THROAT; HEARING AND BREATHING.

Deafness.—This is important to prevent, because it handicaps a child, interferes with his education, reacts on his character, and later may bar him from many professions and business careers. Backward children are frequently deaf, therefore steps should be taken to ensure their early and skilful treatment. Every mother should know the chief causes of deafness:

(1). **Scarlet Fever**, Measles, Influenza, &c., often cause an inflammation of the ear inside the drum (middle ear) similar to that in throat or nose. (2). Enlarged **Tonsils** and **Adenoids** may cause deafness by blocking the pipe (Eustachian tube) between the ear and the throat, or by exciting a chronic inflammation which may extend to ear and affect it similarly. This is a form of "throat deafness." (3). A simple **Catarrh** may cause deafness—as in "cold in the head." Chronic catarrhs, and certain constitutional disorders, may act over a longer period, and end in permanent deafness, unless progress is checked by early treatment. (4). A **Blow** on the ear may rupture the drum and cause deafness, if not *death*—SO NEVER BOX A CHILD'S EARS. (5). **Wax,** or some foreign body, *e.g.*, pea or bead, obstructs the passage into the ear, thus excluding "sound waves" entering. Water causes wax to swell, therefore deafness is often worse (perhaps first noticed) after bathing.

Running Ears.—In all these cases deafness may be complicated by a discharge from ears, a simple defect is now linked with a grave danger—a thin plate of bone *only* separates diseased ear from **brain.** NEVER FORGET that a chronic discharge from ears is a constant danger to life. The patient has the equivalent to a charge of dynamite in his ear, which requires but a spark to explode it, and to bring destruction and death to its possessor. For the disease responsible for the "running" is apt to persist or recur, to spread—*any second*—to the bones of the skull and to the brain, causing serious inflammation or abscess, or incurable and fatal blood poisoning. And not only do these local complications menace life, but the general system may suffer, and the child die from anæmia and debility contracted by infection from the ear. Moreover, should the child escape death from progressive disease of the ear and its dread satellites, permanent deafness will result, and the child's mental development be impaired, and the comfort and utility of the adult be proportionately reduced. So **never neglect a running ear**; do NOT think that it is inevitable—that it *must* come with teething, and that it will surely go as teeth come; do NOT think that "the child will grow out of it"; **never forget** that ear discharges can be cured by patient and proper treatment; by *medical* applications if case is early and simple, by *surgical* operation if it is neglected and complicated. There is no danger in curing a discharge: there *is* danger in checking the escape of a discharge by filling an "ear hole" with powder and cotton wool. **Early operation** MAY SAVE THE HEARING AS WELL AS LIFE; if medical treatment and thorough antiseptic cleansing fails, **operation is imperative,** especially if discharge is bloodstained and offensive. Fix in your mind this fact—a running ear of years' duration must always be the result of neglect or inefficient treatment, and that to permit it to continue is a real,

live danger to life and hearing. A mother should note that the inflammation in the ear which leads to a discharge may cause little pain or be masked by other symptoms, *e.g.*, when it is the result of adenoids or infectious fevers. Often, however, there are signs of earache preceding the discharge, and these in the infant should be noted ; restlessness and constant crying (always suggestive of discomfort or pain), rolling of the head, placing of hands to ear or head, perhaps fever with vomiting, convulsions, and other brain symptoms, suggestive of meningitis or "inflammation." This is an occasion for the mother to apply the maxim—"a stitch in time"—and to seek *expert* medical advice; for although peace comes with pus—when the "gathering bursts"—much can be done before to reduce the violence of the attack, and the damage inflicted on the parts before Nature operates by perforating **the drum.**

N.B.—In Ears and Hearing **beware of quack** treatment and grandmotherly advice ; for the former is fraudulent and expensive, and the latter is worthless and foolish ; both are bad—for child and mother.

Enlarged Tonsils.—Often found with adenoids ; very common in children ; cause sore, unhealthy throat, enlarged glands in neck, difficulty in swallowing and speaking, &c., like adenoids.

Adenoids.—A sort of enlarged tonsil hanging from the roof of the throat above the "little tongue" (uvula) and behind the nose, blocking it and the openings of the tubes leading from ears to throat. Thus the patient is unable to breathe freely through the nose, and gradually becomes deaf, or suffers from repeated attacks of earache, and perhaps discharge from ears which will not stop until adenoids are removed. Other symptoms are :—mouth-breathing, nasal voice ("he speaks through his nose"), snoring, running from the nose ("constant cold in the head"), scabby nose, sore eyes, bad dreams, nervous tricks, convulsions, cough (with, perhaps, "spitting of blood," thereby resembling CONSUMPTION), irritable throat (post-nasal catarrh), enlarged glands in neck (which perhaps "gather" or become infected with tubercle), anæmia, loss of flesh, failure to grow, mental dulness, inattention, bad memory, stupidity—special liability to colds, bronchitis, consumption, infectious fevers, &c., and to die from them when attacked. The mechanical obstruction to nose breathing not only interferes with proper respiration, lymph circulation, and efficient aeration of blood—for chronic asphyxia is the explanation of many of the above symptoms, it causes an easily recognisable, altered, open-mouthed, nostrils-pinched, stupid appearance of face, and, maybe, collapsed lung with a deformed, pigeon-shaped chest, which predisposes to everything bad in blood, or lung, or general health.

The teacher in the school should note these signs of enlarged tonsils and adenoids, and any indication of deafness, *e.g.*, listening with strained expression, knitting of brows, &c., turning head sideways (deafness in one ear), and frequent mistakes in dictation exercises, and should secure such defective children medical treatment rather than inflict on them unjust censure or corporal punishment.

N.B.—Adenoids are easily cured by a simple operation. If the case is neglected, **chronic** and **incurable** ear diseases and deafness may

result, or permanent deformities of brain, mouth, face, and chest stamp the sufferer, and mar the mind. The majority of adenoids could be **prevented** by careful cleansing of nose, by less "coddling" and "pap feeding" (therefore stronger muscles of mastication and better development of parts), and by more fresh air and hygienic exercises.

Operations on Throat—Management of Children.—*On the morning of the day before* your child is to be brought for operation give him one large teaspoonful of castor oil. *On the day* of the operation give him a light meal (*e.g.*, weak tea and bread and butter, or a basin of bread and milk) 3 hours before (longer if chloroform to be used), and *nothing* afterwards. After the operation, when you are told the child is fit to be moved, cover the mouth with a warm wrapper, take him straight home, put him to bed, keep him *lying down*, and do not let him get up again during the day; use the voice as little as possible; avoid exposure to draughts and bad smells. He may very likely be a little sick and may bring up some blood; if he bleeds from the nose or mouth without vomiting give him some ice to suck. Stooping should be specially avoided for five or six days. Give him nothing to eat or drink for at least four hours after the operation, then he may have a little milk or weak tea, and in the evening some bread and milk or bread and beef tea. These should be taken neither too hot nor too cold, but at a tepid temperature known as milk-warm. In throat cases, avoid giving any crust, biscuit, or other hard foods.

On the *day after the operation*, if the child seems quite well, he may get up and have his usual food, but if he seems at all ill keep him in bed and give him only very light food, such as milk, bread and milk, beef tea, or bread and butter.

After-care of Patient following Removal of Tonsils and Adenoids.—It is of the utmost importance that the habit of "Mouth-breathing" should be corrected, and Nose-breathing encouraged, otherwise the full benefits of the operation will not be experienced.

1. Teach the child to clear the nose by blowing freely and frequently, and discourage sniffing and snuffing. To excite interest select a "picture" handkerchief for young children.

2. Direct the child to breathe in and out through the nose while the mouth is tightly closed. This might be adopted as a regular exercise for a minute or two, twice or thrice a day.

3. Where convenient adopt drilling and gymnastics calculated to develop chest expansion. Insist on all these exercises being performed with closed lips.

4. Encourage running, jumping, skipping, and all exercises which expand the chest, always with *closed lips*.

5. Be sure that the nose is "quite clear" at all times, especially at bed-time; use the "Nose wash" if any discharge, *and consult the doctor.*

6. Encourage singing and reading aloud.

NOTE.—Through failure to attend to such instructions a proportion of patients are not cured by operation. This removes a *cause*—recurrence is rare if the operation is properly performed, but the consequences of chronically inflamed unhealthy throat, blocked nose, and damaged ears with impaired hearing **may require prolonged after-care.**

PRACTICAL POINTS.

Blocking of one side of the nose in a child, accompanied by offensive mattery discharge, is nearly always due to the presence of a foreign body, e.g., cherry stone, bead. The commonest cause of repeated "cold in the head" or discharge from both nostrils is **"Adenoids."** This discharge may cause soreness, or an eczematous itchiness and scabbiness of the nostrils and upper lip. A similar state is induced in the ear passage by a mattery discharge from the ear. Cleaning the ear with towels, hair-pins, &c., may excite inflammation with swelling and discharge—if not something worse. Placing pieces of ordinary cotton wool in the ears to soak up discharges only **aggravates** the trouble, for the discharge is *retained* to turn foul and irritate the skin. **Remember** that every child is a "scratcher" and "picker," and that by the finger poison may be conveyed to other parts, perhaps the eye. **Bathing** in sea or swimming bath should *not be allowed* if the DRUM BE PERFORATED or if the child suffers from a CHRONIC DISCHARGE from the ears, for cold water and microbes may thus enter the ear and cause fatal mischief. **Boils** often occur in the ear passage.

Nose Wash.—In all ear and throat diseases cleanliness of the nose assists the cure. This CLEANSING WASH is of general value :—Mix equal parts of salt, borax, and bicarbonate of soda ; dissolve ½ a teaspoonful of the mixture in ½ a tumblerful of tepid water ; pour a little on the palm of the hand ; close one nostril ; then sniff the lotion well up the other—6 times. Gargle the throat with the remainder of the lotion. Then blow the nose thoroughly. If any crusts form soften these well with vaseline in and about the nostril. This completes the "nose toilet."

Cleansing Ears.—In cleansing the ear the parents should syringe it—using a straight, strong glass syringe—with warm water to which has been added a little disinfectant, and the water, &c., should be *carefully* removed from the ear passage by inclining head to one side, and then by mops of absorbent cotton wool rolled on the end of a piece of wood, such as a match. A new piece of wool should be used time after time until the passage is quite dry. **Burn** at once all soiled wool. Note that pulling the lobe of the ear upwards and backwards straightens and opens the passage. In syringing, allow the water to escape as fast as it enters.

Ear Drops.—These may be prescribed to disinfect and heal diseased ears. Sometimes two kinds are ordered : No 1 decomposes the matter, and causes a bubbling and welling of sea-foamy stuff from the passage. These drops (with the syringing) prepare a clean surface of action for ear drops No. 2. To save time No. 1 drops may be ordered before syringing ear. To apply the drops after the ear-passage has been thoroughly dried, a teaspoon should be warmed by dipping in hot water, then five to ten drops of the "ear drops" No. 1 should be put into the spoon. The child should lie on its side on the mother's knee, with the affected ear uppermost, and the warm drops be poured from the spoon into the ear, and allowed to remain there for five minutes. Clean and dry the ear as before, and repeat the process with "ear drops" No. 2. If both ears are affected, the child should then be turned on its other side after plugging the ear with boric wool, and the other ear similarly dealt with, dried out with cotton wool, and the drops warmed and poured into the ear-passage. This should be done night and morning. It is a good plan to pour in drops No. 2 when patient is in bed, and instruct him to go to sleep lying on the unaffected side. If both ears discharge vary the sleeping side. Persevere with drops whilst any trace of discharge else it will probably soon recur.

Ear Powder.—This, *e.g.*, boric acid, should be used with caution if discharge profuse, as it may cake and cause a "stoppage." Blow into ear-passage through a quill or glass tube. Polypi and diseased bone in the ear cause a chronic, foul, and bloody discharge. This condition requires expert treatment and surgical operation.

When there is any **swelling of the glands** around the ear or in the neck they should not on any account be rubbed or poulticed. When the child is over three years of age he should have a pocket handkerchief, and be instructed how to blow the nose.

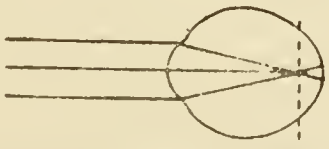
N.B.—The public services demand practically perfect hearing in both ears. In the great majority of life insurance offices, a discharge from the ear will either disqualify, or necessitate a heavy premium being paid.

EYE-STRAIN AND SPECTACLES.

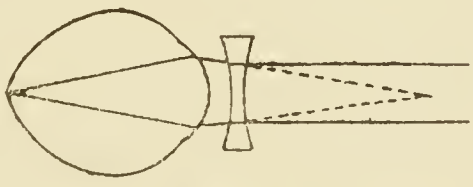
The eye may be compared to a photographic camera in which the picture of the object looked at is formed on a sensitive nervous screen, the retina, which lines the back of the eye and is connected with the brain by the optic nerve. The **normal** eye is so shaped that a distant object is focussed exactly on the retina, and thus is seen with perfect clearness without effort. Should the object, however, be nearer the eye than 20 feet, special focussing is necessary, and this is accomplished by a delicate muscle inside the eyeball, the ciliary muscle, in the action of "accommodation" whereby the lens of the eye is made thicker or stronger, that is of shorter focus. The nearer the object the greater must be the strain to focus the picture of the object clearly on the retina, and the greater the effort required to converge the eyes to "fix" the object. This is why looking at near objects, *e.g.*, in writing, sewing, and reading, tires the eyes, and may cause them to water and feel sore.

The eyeball is sometimes misshapen, and the rays of light—supposed to be parallel when coming from beyond 20 feet—are no longer focussed on the retina of the resting eye, but fall in front (eyeball too long) or behind (eyeball too short), and the image is therefore blurred, and the sight defective, unless the optical error is compensated for in some way.

The **myopic** or **short-sighted** eye is too long; the retina is behind the focus; this means that the focal power of the eye is too strong. Compensation is impossible here; nothing can weaken the power of the lens; so clear DISTANT VISION is an impossibility. But NEAR VISION requires a stronger focus, the divergent rays from near objects are focussed at a point farther than the parallel rays from distant object, so that the smallest print may be seen near at hand without any accommodation or strain of the ciliary muscle. If the myopia is high the focus is so short that objects may have to be held very close to the eyes, which is very harmful, for it may further stretch the eyeball out of shape.



Parallel rays from a distant object focussed in front of the retina in a myopic eye.

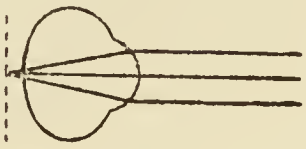


Correction of Myopia by a concave lens, eye too long, rays therefore made more divergent to focus on the retina. Dotted line shows how a near object would be focussed on retina without use of spectacles. This explains good near vision in Myopia.

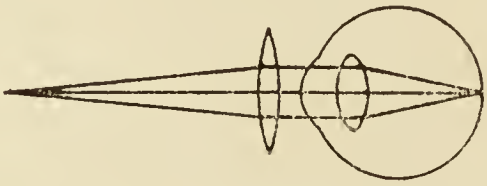
Myopia is a most important eye affection of children, for it is in a large measure **preventable**; a myopic eye is a *weak* eye stretched out of shape, it tends to *progress* during school life, and it is liable to complications which may result in more or less *complete blindness*. (See p. 72.)

The **Hypermetropic** or **long-sighted eye** is too short (flat), the retina is in front of the focus; this means that the focal power is too weak. Compensation *is* possible here, for the ciliary muscle can strengthen the lens and bring the image of the object forward into focus on the retina. Thus if the defect is moderate in amount clear vision may be

obtained, but the strain is such that the owner's eyes are *never* at rest but always in use as if for reading—even when looking at distant objects.



Parallel rays from a distant object focussed behind the retina in a hypermetropic eye.



Correction of Hypermetropia (and old-sight) by a convex lens. Divergent rays from near object made more convergent to focus on the retina, thus relieving eye strain. Similarly distant objects are focussed on the retina without exercise of strain.

In reading, the necessary accommodation has to be superadded to the muscular action of compensation, so that now a very great strain is put upon the ciliary muscle.

Thus a long-sighter may have perfect sight and yet suffer from **eye strain** in the form of eye-tire, headache, neuralgias, &c., and red, sore, "weak," watery eyes with a tendency to winking and blinking, styes, scabby lids, ulcers on the sight, squint, &c.

In **Astigmatism,** or "peculiar sight," the optical error is more complicated and the difficulties are proportionately greater. In the normal eye the cornea (transparent glass in front of pupil) and the lens have the same curvature, therefore the same focussing power, in all their meridians. In the astigmatic eye it is flatter (or relatively longer) in one meridian than another—spoon-shaped instead of being spherical like a watch glass—and the result is the eye is a double focussing one, *i.e.*, some parts of the picture—say figures xii and vi on a clock face—are focussed clearly, whilst the other parts—say figures iii and ix—are so blurred as to be illegible. The ciliary muscle can do very little to overcome this defect, hence both distant and near vision are imperfect. A child may assist its sight by screwing up its eyelids to a chink, or by sloping its head, or by otherwise looking at an object obliquely. A great many cases of defective eyesight in children are due to this optical error, combined with the spherical imperfection of myopia or hypermetropia.

When the eyes do not look in exactly the same direction a person is said to **squint,** or to have a "cast" in the eyes. One eye may turn inwards (convergent squint) or outwards (divergent squint); each eye may squint in turn; the squint may be occasional or constant. It usually comes on in early childhood—about 3 years of age, is commonly noticed after measles, etc., and is often wrongly imputed by the mother to "worms," or imitation, or "evil disposition," etc. It is most noticeable when the child is out of sorts or tired, and is therefore most apparent at night, or when its spectacles are removed. It is, as a rule, due to some fault in vision, optical error, or to unequal strain of the muscles moving the eyeball. The prevalent belief that "the child will grow out of it" is entirely wrong and mischievous. The child must be compelled to **wear constantly** suitable spectacles, which **no chemist or optician** should be allowed to prescribe; the fit of the frames is of great importance, for a **badly fitting pair** of spectacles is often **worse than useless,** and the child must be forced to use the SQUINTING eye, which is often a NON-SEEING eye and tends to go blind from disuse.

HELPFUL HINTS.

All inflammations of the eye with a discharge of matter are contagious or "catching." Such a disease is known as a **catarrh** or **ophthalmia.** Trachoma or "granular lids" is a bad form among poor children and is often imported by the alien. It is necessary to exercise great caution and cleanliness to prevent the spread of such contagion. A child suffering from ophthalmia should be kept from school until the discharge has stopped. It usually begins in one eye and soon spreads by infection to the other; one child may infect a household, or even a whole school unless sanitary precautions are taken. Remember that it is more humane and economical to prevent contagion than to cure contagious disease! Weak, underfed children and adults, those who suffer from eyestrain, those who live in dark, dirty, badly-ventilated rooms often suffer from catarrh of the eyes with redness, soreness, discharge, and sticking together of the lids on wakening in the morning. This disease if neglected may lead to loss of eyelashes, thickening of the lids, constant watering of the eyes, ulcers on the sight, unsightly disfigurement, physical disability, and even partial or total blindness.

New-born babies are liable to a most dangerous and **contagious ophthalmia** which comes on two or three days after birth, and is a most prolific source of blindness. In fact *half of the children in the blind schools are blind from this infection at birth.* Midwives should be taught how to prevent this horrible catastrophe by adopting routine, amongst the poor, simple precautions of cleanliness and disinfection. It is necessary that the best medical treatment be obtained without delay should baby's eyes appear inflamed, for blindness may speedily result.

On no account should a discharging eye be tied up, or treated with bread poultices, tea leaves, milk, or other domestic remedies, and care should always be taken to protect the sound eye. In this connexion it should be noted that a discharge of a "mattery" nature from any part of the body is infective, and may lead to an attack of ophthalmia resulting in blindness.

Inflammation of the margins of the **eyelids** causes them to be red, sore, scurfy, or caked with scabs or crusts which mat the eyelashes together. It is frequent in dirty, neglected, weakly children; it commonly follows measles; some optical error resulting in persistent eye strain is often the prime cause, and parents should note that a pair of spectacles will now have to be combined with the medical treatment before a cure can be effected. If the disease be neglected the eyelashes may be distorted or destroyed, or other distressing deformity and permanently weak eyes result.

Styes are small boils, or abscesses, around the eyelashes; and when they appear in crops indicate the same causes as inflammation of the lids, *viz.*, impairment of health and eye strain, and germ infection of the eye. So the principles of treatment are:—Cleanliness, fresh air, good food, tonics, antiseptic fomentations, etc., and relief of eye strain by use of spectacles.

Ulcers on the sight are common in children of the same class as above. On healing, these ulcers are apt to leave scars or opaque white dots or splashes on the "glass" (cornea) which may interfere with sight.

When a child's eye looks sore and inflamed, and is so sensitive to light that the eye is kept tightly shut, it is almost certain that there is an "ulcer on the sight." Skilled treatment without delay is imperative, for the sooner the ulcer is induced to heal, the less damage there is to repair, and the smaller the resultant scar which will obscure the window, distort the light, and cause defective vision.

In **Scrofulous Ophthalmia** we get the lids—their margins, eyelashes, and red linings (conjunctiva)—the window of the eye (cornea), and perhaps other parts of the eye affected in a more or less mixed manner. The child is little resistant to germ attack, especially to those of the tubercle bacilli—he is weak or "scrofulous"; he may suffer from the same constitutional affection in other parts; the tonsils and glands of the neck may be enlarged; he may have adenoids and nostrils sore and caked with discharge; his ears may run, and the skin be affected with eczema or a scabby disease. Remember that these eyes should NOT be tied up; these children should NOT be kept indoors out of the light; they should be given plenty of FRESH AIR indoors as well as out of doors; GOOD FOOD with plenty of fat, *e.g.*, bacon, dripping, butter or good margarine, fresh milk; tonics, *e.g.*, Parrish's food, syrup of iodide of iron, cod liver oil; and be well bathed each day and carefully tended through the day. The ear, nose, and throat should also receive attention.

There is another form of constitutional and **hereditary** disease affecting children's eyes which often works untold havoc, and is manifested in many different ways. This transmitted disease nearly always affects both eyes, usually within an interval of a few weeks, and in severe cases lasts a year or more and the eye never perfectly recovers. The remedies ordered should be used with skill and patience.

Cataract *is a common cause of defective sight in elderly adults, and can only be cured by an operation. Beware of "eye exercisers," and the products of all advertising quacks.*

Children also suffer from **Cataract,** which is a chalk-like opacity in the lens blocking the light. Near-sight may be imitated by cataract, and only an oculist can tell the exact nature of the defective sight, and whether an operation is necessary for recovery.

N.B.—Children should be warned against playing with pins, needles, darts and such like. For they may enter the eye, pierce the lens, and cause a cataract and complete blindness.

Cataract in children is an excellent example of a genital or in-born disease. Some children suffer from a congenital inability to read—**word-blindness,** and of course experience equal difficulty with letters of large and small type. It has been stated that twenty-five men in every hundred are more or less **colour-blind**; they cannot distinguish red from green. Some suffer from **weak sight** although no cause can be found for it even on careful examination of the eyes.

It should be noted that the eye in its nervous part (retina, optic nerve, brain centres) is a portion of the brain and subject to the same diseases. Therefore sight may be defective without any change inside or outside the eye being found to account for it. These are the cases which are misled by prescribing opticians and unscrupulous quacks. It should be clearly understood that spectacles are **not** cure-alls, neither are spectacle makers the guardian angels of the public sight.

PRACTICAL INSTRUCTIONS.

To apply **lotion.**—Place the patient on his back and stand behind the head. Pack a towel round neck to collect waste. Take pieces of clean rag (or cotton wool) and soak in the warmed lotion ordered. Separate the eyelids (without pressing on the eyeballs) and squeeze the lotion into the eye, so tilting the child's head that it runs out at the *outer* corner into a dish placed to catch it. Allow lotion to remain in healing contact with the sore surfaces after removing discharge from the red sac and before releasing lids. Then soften and remove the crusts which are apt to form on the edges of the lids. Protect the good eye from infection. Burn all swabs after use, and thoroughly wash and disinfect the hands.

To instil **drops.**—Draw the lower lid down away from the eye whilst the patient looks upwards. Allow one or two drops to fall upon its inner surface from an eye-dropper (a fountain pen filler will do), or from a camel's hair brush, wick of clean rag or cotton wool.

Caution. Patient should not swallow drops, nurse should guard her own eyes, and drops and eye-dropper be destroyed after use by patient—for there is a danger from misuse and spread of contagion.

To introduce **ointment.**—A small camel's hair brush (or smoothed wooden match) is dipped into ointment, and inserted between eyeball and lower lid separated as before. The lids are then closed and the brush gently drawn away at outer corner of eye.

In scabby diseases of the lids, the ointment prescribed (*e.g.*, Hyd. Oxid. Flav. gr. xvi. Vaselin. oz. i.) is *scrubbed* into the roots of eyelashes with a clean fore-finger after scabs have been softened, or removed, by fomenting with a hot lotion containing a teaspoonful of boric acid or bi-carbonate of soda to the pint of water.

Hot dry compress.—Take a lump of cotton wool or sheet wadding, warm well in front of fire or against a can of boiling hot water, apply to closed eyelids, and fix by bandage or handkerchief. Change often, use as hot as can be borne.

Cold wet compress.—Take a square (single thickness) of soft rag or lint, fasten over eye by safety-pinning upper corners to piece of bandage (or broad tape) tied round head. Keep this constantly cold and wet by frequent soaking in iced water or prescribed lotion. Better still, keep several squares immersed ready for use, or swabs of cotton wool in iced lotion or on a block of ice by the bedside, and change "as often as the one in use ceases to give a sensation of cold." Renew all cloths or pads at frequent intervals else eye suffers harm from discontinuance of cold.

Hot wet compress.—Take a piece of linen, lint, or flannel folded several thicknesses, dip into very hot water, squeeze as dry as possible by hand or by twisting between folds of a towel, then apply to lids, cover an inch wider with a piece of oiled silk or jaconet, and envelop well with a hot, dry compress of wadding or wool. Apply as hot as possible without undue pressure on eye.

Boric fomentation.—Use boric lint instead of linen, apply as above.

Poppyhead fomentation.—Boil 6 heads (without seeds) in 1½ pints of water for 20 minutes, and foment eyes with warm liquor several times a day.

CAUSES OF DEFECTIVE VISION.

1.—**Optical Error.**—The eye is misshapen and focussing is faulty. This is capable of correction by spectacles: concave—short-sight; convex—long-sight; cylindrical convex or concave—astigmatism. In this case, spectacle lens + defective eye=normal eye.

Prominent eyes with large pupils suggest myopia. Objects are well seen close to the eye, *e.g.*, book when reading, whilst distant objects appear blurred, *e.g.*, writing on the blackboard. Good near-sight combined with bad far-sight means myopia, and need for spectacles to help the eyes, and special care of the child to strengthen its eyes.

Do not think that all is well because a child can read well. Short-sighted parents often overlook short-sighted children.

A child may be artificially myopic (short-sighted) through spasm of an irritable, overworked, and exhausted ciliary muscle. "Cramp" of this muscle causes the same strain as its over-use; it is often due to a "long-sighted" defect which is remedied by rest and a *convex* glass. This organ works slavishly from stubbornness; it spasmodically overworks from sheer perversity; it may fail to work from fatigue!

N.B.—A child should, therefore, **never** be allowed to wear concave glasses ordered by an optician.

Small, deep set eyes with contracted pupils suggest hypermetropia, sore or weak eyes the STRAIN of hypermetropia or astigmatism. Difficult near-sight combined with fair distant-sight means the same. Hypermetropia without defective V or symptoms of eye strain can be neglected.

A child with a low degree of hypermetropia or astigmatism may, *by straining his eyes*, read the same print at the same distance as the optically perfect. Such cases would pass undetected by the teacher, and be entered as V=normal. Yet these defects may impose on the child in school the greatest *strain-fatigue* and risk of *strain-diseases*. Nerve force that should be spent in acquiring knowledge is partly consumed in correcting an optical error. In this there is neither efficiency nor economy; it means a mad dissipation of precious energy; it is "ploughing the sands" to reap sore eyes and muddled brains! The medical inspector who puts his trust in test card and teacher may flood the eye hospitals with visual defectives, but he in turn will be fooled by many an eye-straining child suffering in silence.

If the hypermetropia is high, or the child "run down," compensation may fail, and the error become manifest in defective Vision, or struggling Vision, or by red eyes which signal—DANGER.

N.B.—The treatment of many chronic eye diseases necessitates the wearing of convex glasses prescribed by a *competent* medical man.

Eyestrain may be a contributory cause of even the simplest eye disease.

2.—**Eye Disease.**—Anything which blocks the passage of light into the eyes, or interferes with the structure or function of any vital part of eye, eye-brain, or nerve connections, *e.g.*, catarrhs, corneal ulcers and scars, cataracts, tobacco poisoning, etc. Half the children in the blind schools are blind from ophthalmia caused by infection at birth, **a preventable catastrophe,** the rest from cataract, optic atrophy, and various diseases or inflammations.

The eye is a part of the living body; the materials of which it is built are being constantly nourished, wasted, and repaired, like all the other tissues of the body; hence when the body generally suffers from disease the eye is likely to suffer also. Its many different kinds of tissue are liable to many kinds of disease. Through the window of the eye the medical men can see "a sort of little show-room in which diseases of many kinds display their work. Diseases of the blood, of the nervous system, of the kidneys, of the heart, over-eating, over-drinking, over-smoking; privation, cold, dirt, licentiousness . . those who would learn to preserve their eyesight must learn the way to preserve their health." *(Priestley Smith.)*

Only faults in the mechanism of the eye as an optical instrument can be corrected by glasses; so-called "errors of refraction" because they concern focussing, or refraction of light. Faults in the receiver, connecting wire, exchanges, and in the thinking and interpreting brain centres, are unrelieved by spectacles, and all too commonly tax the medical resources of the cleverest physician. Errors of refraction remediable by glasses often, however, occur in association with diseases of the eye. The mere correction of the former by means of spectacles would ignore a condition which would destroy sight, or even leave the life of the patient in danger. This is why it is misleading and dangerous to the public to certify as competent to advise and prescribe for defects of vision anyone who has not had an efficient medical and surgical training. Spectacle-sellers have not had this training.

3.—**Functional Disorder.**—(*a*) Exhaustion, overwork of eyes, bad light. Teachers should be careful not to place blackboards between windows opposite the children, but to place them so that sufficient light shall always fall on them, and should see that all that is drawn or written thereon is sufficiently large to be seen easily by the children in seats most remote from the board. Teachers of girls and infants should always have regard to the eyesight of children when doing needlework by seeing that they have sufficient light, etc. (*b*) Defective bodily nutrition from bad or insufficient feeding, unhealthy environment, etc. (*c*) The weakening effect of any debility or general disease of the body is shared by the eye in part.

4.—**Impaired Perception.**—(*a*) Dull brain—the teacher says the child seems to have no memory. (*b*) Overuse (near) and disuse (far), want of training, *cp.*, distant vision of town and country child, the Boer of the illimitable veldt, and the Englishman of the street-limited town.

It should be noted that the act of seeing concerns eyeball, nerve, and brain. The picture of the object focussed on the retina is conveyed by nerve of sight to brain sight centres, and is by these perceived and interpreted as the thing we see. The young child may see letters—as objects—perfectly, yet if his brain acts slowly in interpreting *objects as letters*, he may seem to have defective vision. If his brain is lacking in this sight perception (as distinct from sight sensation) letters appear to him as meaningless smudges, or "as so much Greek," he is WORD-BLIND: he has sight sensation without intellectual understanding—he sees without perceiving—he is MIND-BLIND. Herein come the psychological factors of good vision, and their relation to the development, exercise, education, environment, and intellect; herein lies the explanation of much bad memory and dulness in learning to read or write. The teacher should ponder over these things, and recognise the **barriers to his pupil's progress.**

Sight Testing in Schools.

Sight is tested mainly by the use of DISTANT TEST-TYPES. On these are printed letters of different sizes, over which are numbers showing the distance in feet (or metres) from which the normal eye can read them. If, in a good light, the letters marked D-6 can be read, with each eye separately, at a distance of 6 metres (20 feet), the acuteness of vision (written V) is considered normal, *i.e.*, V=$\frac{6}{6}$. If from 6 metres the type marked D-$\frac{6}{12}$ only can be read, it means that letters are read at 6 metres which should be read at 12 metres, *i.e.*, V=$\frac{6}{12}=\frac{1}{2}$ the normal. Other distances are similarly marked, so that acuteness of vision can be accurately calculated and recorded in a fraction of the normal V, in which the distance in metres (or feet) of the patient from the type forms the numerator, and the distance at which the smallest letter he can read, *ought* to be read, is placed for the denominator.

In classifying defects in the acuteness of vision in this scientific manner, Good V would mean $\frac{6}{6}$; Fair V $\frac{6}{9}$ to $\frac{6}{18}$; Bad V $\frac{6}{24}$ to $\frac{6}{60}$; and so on. These standards of sight are only of limited value; they represent the average V of normal eyes of different types of children under varying conditions; slight deviations cannot, therefore, mean corresponding optical defects—the eye may be normal, the eye-brain abnormally dull! (The normal standard of V usually adopted by oculists is $\frac{6}{6}$, *i.e.*, any fraction below unity, *e.g.*, $\frac{6}{9}$, means defective V.)

The *real* test of optical error is that by "retinoscopy" performed by an oculist. This is objective and trustworthy; the other is subjective and often fallacious. For this test in children it is necessary to use atropin in the form of "drops" or ointment. This causes the pupil to dilate, and the vision to be disturbed, but these effects will pass off in a few days, leaving the eyes better for the rest.

1.—Carry out the testing, if possible, on a clear, bright day, and in no case substitute artificial light for daylight.

2.—Hang the test card about 5 feet high, in a good light, and in such a way that the child does not face an outside window when reading it, and preferably has its back to the light.

3.—Measure off 20 feet (=6 metres) from the card across the room, and chalk a line. Direct the class to stand and turn *away* from the card. Let each child come down in turn and toe the line facing the card.

4.—Test the eyes separately, covering the eye not in use by holding a stiff card in front of it. *If pressure is made on the eye with the fingers it will not see well when tested.*

5.—Find the lowest line in which the *majority* of the letters can be read, and record the result thus—RV=$\frac{6}{6}$; LV=$\frac{6}{9}$.

6.—If vision is found defective, record the result in the square or column on the form which should be provided for the purpose. If no letter on the card can be read, write "nil" or enter the figure 0, in the appropriate space on the form.

7.—If the child wears glasses, test without these first, then put on the glasses and test again. Record the result now within a ring thus ($\frac{6}{9}$).

8.—In addition to recording case of defective V revealed by the test card for distant vision, the teacher should also note cases of apparent defective near-sight, or of disease of eyes or eyelids, cases of squint, etc.

POINTS TO NOTE; DEFECTS TO TREAT.

1.—Children with weak, sore, or red-rimmed eyes; with eyelashes thin or matted, styes, scabby lids, with or without discharge; white or milky spots over pupils (corneal scars).

2.—Those who squint or have a habit of winking or blinking.

3.—Those who bend over book or bring book, writing or sewing close to the eyes, *i.e.*, less than twelve inches.

4.—Those who screw up their eyelids, or pull faces as if in pain, or who wear a strained expression when reading, or when looking at blackboard or map.

5.—Those who cannot easily read blackboard from their seats, or who make frequent errors in copying, or write cramped or unduly small.

6.—Those who get headache, or pain in or about the eyeballs, and watery or flushed eyes when reading, writing or sewing.

7.—Those whose eyes are unduly sensitive, who have pain on, or fear of, opening eyes in good light, and therefore tend to shade the eyes with their hands. Weak sight is often the result of eye strain.

8.—Those who slope the head to read, or otherwise adopt faulty position of body—with its bad effect on development, symmetry, chest expansion, and circulation of blood.

9.—All backward children suffering as above.

10.—That sore eyes, squint, stupidity, and headache may often be prevented or cured by wearing spectacles.

11.—That an operation may cure a squint, but it cannot restore sight to an eye blind from squint.

12.—That eye strain, the result of optical error, is responsible for serious mental and physical incapacity and suffering.

13.—That every scholar needs good sight in both eyes; that defective sight impairs the wage-earning capacity of the adult.

14.—That neglect to relieve the remediable effects of vision is a grave offence against the child and against the community.

15.—That the vision of every child should, therefore, be recorded on admission to the school, and be tested once in the course of each year.

Words of Warning.

Do not forget that an astigmatic or long-sighted person is often unconscious of any deformity of his eyes or defect in his sight. He probably attributes the redness of his eyes to cold; the headache to simple neuralgia; the giddiness and bad vision to biliousness; the running together of the lines of print, watering, the sore lids, and the recurring styes to that universal scapegoat "weak eyes!" Besides other minor ills, eye strain from an uncorrected optical error may cause corneal ulcers, squint, cataract, and that gravest of eye diseases which, if neglected, generally leads to total blindness—glaucoma.

Do not forget that a child that constantly scowls, or is sullen-looking, is probably a sufferer from eye strain, and should have its eyes examined for spectacles.

Do not forget that ready-made glasses, bought hap-hazard at a shop, afford neither comfort nor safety, but serve to aggravate the disease, and to delay or prevent a cure. **Do not consult** advertising opticians or "eyesight specialists."

N.B.—A *flat eye* may develop into a normal eye if the child be accurately glassed. If not, this defect may persist through life, or pass into *long eye* and short-sight. Short-sight will be aggravated by wearing unsuitable glasses.

TO PRESERVE THE CHILD'S SIGHT.

Myopia (or short-sight) demands the detailed consideration of all who are concerned in the upbringing or care of children.

Myopia is always a defect, often a disease. It is often progressive, and may lead to very bad sight, even to incurable and total blindness. Its progress can be, and often is, accelerated by neglect and improper use of the eyes, and retarded by early detection of the defect and its correction by constant use of suitable glasses, the exercise of judicious care, and the adoption of precautionary measures in and out of school.

There can be no doubt that school work improperly conducted and accompanied by excessive eye strain is an important factor in its production and aggravation. Savage tribes enjoy a complete immunity from this affection; it is essentially the acquired product of civilization, for it cannot be denied that the frequency and degree of short-sight are directly related to the demands made upon the eye during the educational period of life from 12 to 18 years of age.

It should never be forgotten by educationalists that the educational period of life embraces that in which growth and development are the most active. Health has been rightly termed the greatest of blessings, and we cannot but admit that the highest educational success, or culture, is heavily discounted if it is obtained at the expense of good eyesight.

To know how to prevent a defect or disease, it is necessary, first of all, to know its **causes.** Whilst hereditary predisposition and impaired general health have great influence in the development of short-sight, it must be admitted that the most important and preventable factor is overstrain of the eyes, especially during the impressionable period of school life. This overstrain of the eyes, which results in a stretching and lengthening of the eye-ball, is produced:—

(1) through prolonged use of the eyes for near work—reading, writing, needlework, drawing, etc.;
(2) through the small type or bad printing of school books in use;
(3) through too early employment at too fine needlework, or near work of any description;
(4) through imperfect lighting, artificial or natural, of school or work-room;
(5) through books, etc., being placed too close to the eyes owing to the bad position at the desk or table.

In addition to the risks of this nature operating injuriously during school hours, there are similar risks of defects of vision being produced, or increased, at home in the time devoted to home lessons, etc.

To **prevent** short-sight, therefore, children should be prevented from using their eyes too long and too closely on near objects. Small print, fine stitches, small writing, and all such fine work, should be tabooed for young children. No work should be held nearer to the eye than 12 inches. There should be no stooping over the work, as stooping causes congestion and softening of the eyes. The light should be sufficient and fall from the left and behind; there should be no front light, as much of this exhausts the retina without in any way assisting vision. Medical supervision of the child is very necessary.

TUBERCULOSIS; PHYSICAL DEFECTS FROM DISEASE.

Almost every portion of the body may be attacked by the *tubercle bacilli.* When the hip-joint is attacked, hip-joint disease follows; a similar affection in joints like the knee causes "white swelling"; tubercular disease in the spine causes angular curvature—the deformity known as "hunchback"; when the covering of the brain is involved the child has tubercular meningitis; when the glands of the neck are infected, scrofulous (tuberculous) glands, and abscesses (commonly) and unsightly scarring are the outcome; the dreaded lupus, which leads to such destruction and hideous scarring, is a form of tuberculosis of the skin; when the bowels and parts are affected we get "consumption of the bowels"; when the lungs are invaded by the tuberculous process there results that scourge of the white man—consumption of the lungs, phthisis. The tubercle bacilli may make a combined attack on nearly all the internal organs; death now results from *general tuberculosis.*

Tuberculosis is not inherited as was originally thought. We have all taken the germs of the disease into our bodies at some time, probably many millions of them! The difference between us is that in one the germ finds little resistance to growth, a suitable soil, and so it flourishes; in another, unfavourable conditions, a hostile reception—health and vigour of constitution, the blood cells proving mightier than the foreign invader—and so it dies. Children are very susceptible to the infection, especially after recovering from a debilitating disease like measles or whooping cough. But the tendency is always toward **cure** if *early* and proper treatment be adopted. Joint diseases in children are very frequent, very trying, and are often overlooked in the early stages when every minute lost by the mother means a **month's start** to the invading **microbe!** Consider the most important points of tubercular disease:—

Hip-joint disease.—Commences with a slight lameness, a limp, and perhaps a little turning out of the affected limb, and the child complains of some obscure, may be slight, pain in the hip and often in the **knee.** A mother should **never forget** that limping, with pain referred to the knee, may indicate tuberculous disease of the hip joint, and that this is the time for the child to be put to bed under medical treatment. For—and this is of general application in tuberculous joint mischief—*if the case has been seen early enough,* if the constitution is fairly good, and the conditions for the treatment are favourable, a RAPID CURE may possibly follow. But should the case be neglected, the disease will spread to the bone and cause "night starts," abscesses will complicate, blood poisoning will ensue, and death eventually result, or—a long delayed recovery with a stiff joint, withered limb, and a permanent, crippling deformity.

Tubercular spine disease, or *angular curvature.*—The spine bends at a sharp angle where the disease is situate. Onset is again insidious; pain may be referred to the legs and put down as "growing pains," or to the stomach and be called "stomach-ache." The child fails, soon tires, is less active, is stiff in the back, and walks with a gait. Seek medical advice **early**; do **not** wait for curvature, else you wait for a hunchback child and abscesses, wasting, paralysis, and, perhaps, the lingering and painful death of your little patient.

Tubercular disease of the knee, ankle, wrist, or elbow. The child first complains of pain in the part affected, be it hip or knee, bone or joint. Soon the part becomes stiff, the pain increases, some heat and swelling of the part will appear—a shapeless "white swelling," and the child will become seriously ill, unable to sleep through pain at night, and loses appetite, colour and strength. If the case is neglected an abscess forms, which bursts and discharges, and the child gets weaker, contracts pneumonia or general tuberculosis, and dies; or if an operation is performed, and the diseased bone, etc., removed, the wound may heal, but the child is left more or less crippled with a shortened leg, and a deformed or stiffened joint.

One of the commonest results of inflammation of these joints is that they become bent. Long after the initial disease has subsided the joint will begin to bend, or, if left already bent, will become more bent. In case of the knee this bending increases until the toes cannot be made to touch the ground without bending the other knee, so the patient takes to a high boot. This bending may increase to such an extent that even a high boot is useless, and an operation has to be performed to straighten the knee. It is necessary that the patient be kept under observation, and the knee joint kept straight, for at least two years, else the joint will almost certainly, though very gradually, bend again. A careful mother will, therefore, **never forget** that it is this *tendency to recurrence, both of the disease and the deformity, which makes it imperative that supervision should be continuous and prolonged.*

It cannot be urged too strongly that **Tubercular Disease** should be recognised at the EARLIEST STAGE, and the affected part be put *completely at rest.* The sooner this is done the less destruction of tissue will impair the part and need repair, and the sooner the child will be permanently cured of this distressing disease. To detect the disease early, it is important that not only mothers but school teachers should have some elementary knowledge of the disease, and that the child be medically inspected with regularity in the school. To fix the affected part rigidly at rest, various splints, or plaster of Paris casings, will be required, and in severe cases of tubercular hip or spine disease, prolonged stay in bed may be necessary. Rest for a sufficiently long period of time is *the* essential, and the mother should be taught how to apply a splint, and to realise the danger of discontinuing the splint without medical advice.

There is no disease which is responsible for a greater number of physically defective people than tuberculosis. The disease is bred of neglect, bad feeding, and bad air, all causes of lowered vitality of the patient, and the tubercle bacilli, given an injury in a weakly child—especially if there is "consumption in the family"—will quickly settle in the injured part and produce their typical inflammation. The moral, therefore, is that if the disease is to be stamped out, the poor should be better housed, be better fed, be made to wash, and be taught how to avoid spreading the infection, and the necessity is shown for country hospitals for children, convalescent homes, and special schools for invalids and physical defectives under medical supervision.

CURVATURE OF SPINE; ENLARGED GLANDS.

Spinal curvatures are very common in children, and two great classes must be distinguished for they need very different treatment and care. In the one you have an angular curvature (which is the product of destructive tuberculous disease) requiring the most **absolute rest,** constitutional treatment, and anxious careful nursing when far advanced; in the other you have a curve, not backward, but from side to side, involving the greater part of the bones of the back—a long, **lateral curvature** looking like an S. This curvature is *primarily* associated with weakness; it is a yielding of parts, not a destruction of texture; subsequently, however, the deformity may become SET and incurable by *secondary* alterations in the shape of the bones, muscles, and ligaments. Spinal curvatures are often associated with **rickets** in the young child; constitutional debility, *e.g.*, convalescence from some acute illness; faulty habits, *e.g.*, whilst sitting at school desk, playing piano, etc., and hence cases are of frequent occurrence in rapidly growing girls between 8 and 18 years of age. Mothers often notice that "the right shoulder is growing out," and that the gait is awkward. Usually there is no complaint of pain or illness. Recovery is possible after more or less distortion has resulted, and the condition does not, of necessity, imply ill health in the future.

These cases are **not** treated by rest, but by strengthening diet and corrective regimen combined with muscular exercises, movements, and drill of all kinds, *e.g.*, Swedish, to educate and develop the muscles. If the case has been neglected, and the bones, etc., have undergone structural change, it may be necessary to support the crippled spine with suitable apparatus, corsets, etc.

Enlarged Glands under the jaw and in the neck are very common in children. They are generally the result of infection from some sore, or inflamed organ, or unhealthy condition of the part from which the lymph flows to the gland. These lymphatic glands act as filters, and in stopping poisons from entering the blood they become injured and inflamed, just as the hands of a cricketer who stops a fast ball! The common causes of ACUTE SWELLING are skin sores or eruptions, decayed teeth, inflamed throat. Hence the glands of neck are, perhaps, seriously involved in scarlet fever or diphtheria. CHRONIC SWELLINGS are commonly the joint product of some constitutional *weakness* as described, and *infection* from rotten teeth, or from an unhealthy throat harbouring enlarged tonsils and adenoids. The glands may slowly gather, burst, and, if tuberculous, discharge thin matter with curdy lumps.

The **treatment** consists in (1) removing cause—local and constitutional, and (2) applying remedies which will fix the part (secure rest) and cause absorption of the swelling. (3) If an abscess forms note that *early opening with the knife saves much scarring;* (4) do **not** poultice without medical advice; if heat be ordered it is best applied in form of cotton wool wrung out of hot carbolic lotion (1 tablespoonful to a pint of water) and covered with jaconet and hot sheet wadding. After opening, or bursting, of an abscess, boric fomentations are the cleanest and best dressings to use. Apply boric lint, as above, instead of cotton wool.

NOTES ON SURGICAL TREATMENT.

In **Hip disease** a Thomas's splint, which extends from the ankle to the chest, fitting accurately the back of the leg and trunk, should be bandaged to the child. Note that the skin of a child is very delicate, and that all splints should be well shaped, and padded over bony prominences to prevent soreness, chafing, and even ulceration. The splint should be worn night and day. If the pain is severe the child should remain in bed. If not severe the child may be allowed up on crutches, with a patten on the opposite boot to raise the affected leg from the ground. "The splint should remain on for not less than twelve months from the last time the child has any pain." If not—if the mother yields to the temptation of seeing her child run about—the symptoms will return, an abscess form, and the splint will have to be re-applied.

To prevent permanent stiffness and lameness **other joints** similarly diseased must be fixed *at once*, and kept at rest for a variable period of time, "two years for the knee, eighteen months for the ankle, and twelve months for the wrist and elbow on an average."

There are two weak points in the **spine**—one at the upper and the other at the lower end of that part of the spine to which the ribs are attached. It is at these two points that the spine is liable to suffer injury, and it is here that tubercular disease of the spine most easily manifests itself. There may be pain, there may be a hump, there may be an abscess in the neck, the back, or groin, according to the position of the disease, or there may be paralysis of the legs. In every case it is important that the disease should be recognised as early as possible, and the spine put completely at rest. The patient must be kept on his back and bandaged to a special splint which should extend the whole length of the body. He must remain in the splint night and day. The patient must be kept in bed until the pain improves. He may then be lifted on to a sofa. He must remain recumbent with the splint on for at least a year. If an abscess has formed, and it has been compulsory to open it, there will be discharge. The child should be kept lying until this discharge has ceased, which may be as much as four years. If there is paralysis the child should be kept lying until the power in the legs has been regained (which may be two or more years). Unless the spine is kept in this splint, and in a horizontal position for a sufficient length of time, the disease progresses, the abscess discharges more profusely, the hump increases in size, and the child, if it lives, become a permanently-deformed person. When the child is allowed into the upright position it will be necessary that a felt jacket or other appliance to support the spine should be worn. If the disease is located towards the upper end of the spine the weight of the head must be artifically supported when the child resumes the erect posture. *(Openshaw.)*

In nursing a patient with an **abscess**, or discharging sore, the greatest precautions must be used to keep the wound clean, and to prevent soiling or infecting it with germs or dirt. The air of the room should be kept sweet, the patient's clothes and skin clean, the attendant's person and particularly the hands, clean; in fact there should be the most scrupulous cleanliness of everything, of hands, basins, dressings, etc. The chronic abscesses connected with diseased glands, bones, and joints, are insidious in their progress, and are apt to be unnoticed and neglected till far advanced. After opening, or bursting, they are very liable to become putrid from germ (or dirt) infection, and their healing to be slow and doubtful. Any chronic discharge is apt to induce a form of fever known as Hectic. It is seen in its most typical form in phthisis, and in spinal abscesses, hip-joint disease, and similar wasting disorders.

CONGENITAL DEFORMITIES.

Congenital Club Feet.—The commonest of congenital deformities. The child, as regards the size and number of its parts, is perfectly formed, but parts of the foot before birth have got twisted or displaced, causing the foot to turn inwards, or to become crumpled into a club-foot. Every such deformity is curable, and the poverty of the patient is no excuse for neglect for any child to be allowed to grow up with such a defect. Special experience and prolonged treatment are, of course, necessary, and in every large town, and in connection with every Children's Hospital, there ought to be a surgeon (orthopædic) who knows how to deal with and cure these cases.

Treatment should be commenced immediately after birth. The foot should be straightened by operation and splints as soon as possible; and it should be kept straight by an appliance, and should remain under surgical supervision until the child begins to walk. The act of walking will then usually keep the foot straight during the day, but at night an appliance must be worn. If treatment is postponed or neglected, the child may be compelled to wear a supporting instrument for a few years after he has learned to walk. It is not sufficient to straighten the foot. It will not remain so; it has an inherent tendency to resume the distorted shape in which it has commenced to grow, so that the parts must be kept in proper position sufficiently long to allow them to attain their normal shape, and until the tendency to recurrence of the deformity has disappeared. It follows that if these deformities are to be cured the treatment must be commenced early, and must be intelligently and patiently carried out under the direction of an orthopædic surgeon.

Congenital Dislocation of Hip.—Luckily this deformity is rare. The child is born with one or both hips out of joint, and as a consequence it is lame, walks with a limp, or waddles like a duck, is easily tired, and the leg is short. Later on the shortness of the leg increases, and a high boot becomes a life-long necessity unless surgical aid is invoked. Through the genius of Lorenz we now know that the hip can be replaced, and that by specialised surgical skill more than half such physically defective children can be cured.

Besides the above deformities, which are examples of (A) TWISTING OR DISTORTION OF PARTS otherwise normal, there are deformities resulting from (B) MALFORMATION OF A PART, *viz.*, either (1) an Absence, (2) Dwarfing, (3) Cleavage, (4) an Increase in number, or (5) an Adhesion or growing together of parts. *(Openshaw).*

Harelip.—This deformity is so disfiguring that the mother is compelled to seek medical aid, and so the public are well educated in the knowledge that the deformity is perfectly curable, and the physical imperfection removable.

With regard to curable deformities under this head: "In my opinion it is positively criminal to allow a child to grow up with such a deformity uncured. The deleterious influence of such an abnormity upon the mind of the child is not sufficiently appreciated by parents. Familiarity breeds forgetfulness, carelessness, and contempt. . . . No school manager should tacitly permit such a deformity to persist." *(Openshaw.)*

PARALYSIS; PARALYTIC DEFORMITIES.

The form of paralysis known as "infantile paralysis" is responsible for much physical unfitness and suffering. This disease is common under 3 years of age, and generally begins with the child being slightly unwell and feverish, and with pain and tenderness which is followed by paralysis of one or more of the affected limbs. When the acute stage of the disease has passed off, it is usual for some of the parts which were stricken down to recover power. If all four extremities were originally lamed, perhaps one leg and a part of one arm and the other leg will be left weak, or completely devoid of the power of movement. If only one leg were originally involved, the whole may recover except one muscle, or one group of muscles below the knee. The most common condition is where one leg remains, more or less, partially or completely paralysed. It may be impossible for such a child to stand or to walk. It is always impossible for such a child to walk properly without some support. In these cases some muscles are paralysed, others are quite strong and active. It is not long before the contraction of the muscles which are not paralysed begins to pull the leg out of shape. The knee becomes bent, or the toes pointed, or the foot twisted inwards or outwards, or the hips bent upwards, and thus the leg becomes deformed and useless. Not only do subsequent contractions and deformities arise when recovery is partial, but the part is left cold and dead, and fails to develop, and a high boot may be required to counteract the shortening of the leg which has resulted from the paralytic malnutrition and arrest of growth.

The general treatment of the paralysis consists in good food, tonics, massage, and electricity. The treatment of the deformity consists in straightening the deformed part by surgical operation, and in maintaining the limb in the correct position by means of apparatus. The appliance will vary in design to suit the individual deformity, and must be so adapted that it retains the limb in good position whilst standing or walking. By means of these appliances even those children who possess power of no single muscle can be made to walk. The treatment of these paralytics must be continued for years, frequently during the whole period of their growth, and in some instances they are compelled to wear some support all their life.

It is essential, therefore, that these paralytics should be educated in special schools, and be prepared for some trade suited to their physical defect. During this period of growth (at least) they should be placed under constant surgical supervision, and whenever possible, means should be provided to keep these poor paralytics in touch with an orthopædic institution. One word of **warning** to mothers is necessary: never allow your child to be treated by a medical quack in nervous diseases, or by a surgical quack performing on the stage under the specious guise of a philanthropist.

There are other forms of paralysis, some associated with more or less brain and mental disease, *viz.*, birth-palsy, and one-sided paralysis following a hæmorrhage into the brain, etc. In a few of these paralytics the deformity is the main feature, and must be treated on the above lines. In others the mental defect is marked, and the child is daft.

THE CARE OF PARALYSED LIMBS.*

Clothing.—It is necessary that the affected limb be kept warm day and night, and for this purpose the whole limb should be constantly covered with some woollen materials, *e.g.*, for day, thick knitted stockings to come up above the knees; for night, a flannel leg-sack perhaps lined with wadding. *Paralysed limbs are delicate, and easily chafe and ulcerate.*

Rubbing.—This should be done for 15 minutes morning and night. The child must lie on a bed whilst his leg is being rubbed. The object is to promote the flow of blood through the muscles, and to stimulate their nervous activity.

(1) Always RUB UPWARDS, beginning at the foot and going right up to the hip. Both back and front of the leg must be rubbed in turn, whilst the limb or foot is supported by the other hand. Rub strongly over the soft parts, gently over the bones. Use for rubbing any kind of oil or simple embrocation.

(2) After this simple rubbing, KNEAD the whole leg carefully from the toes upwards, using the flat of both hands round the limb, and not the tips of the fingers. When the front of the leg has been so treated, turn the child on his face, and knead, in turn, the soft parts over the back of the limb. Another method is to take hold of the child's leg with your two hands just above the ankle, and rub round the leg in opposite directions "as though you were wringing sheets."

(3) Grip the child's calf with your two hands, the fingers being to the back of the leg and the thumbs to the front. Squeeze and flatten out the soft parts between your fingers and thumbs. Work right up the leg and thigh in this manner, PICKING UP, PINCHING, and WELL ROLLING successive portions of the muscles.

(4) FLIP every part of the leg and thigh with your fingers, or smack the skin well with your hands, so as to make the whole of the limb quite red and warm. Afterwards gently RUB up and down all over to remove the stinging left by the last movement.

A paralysed arm should be rubbed from the fingers to the shoulders in a similar manner.

(5) Encourage the child to TRY TO MOVE all parts of the weakened limb in all directions. For example, whilst guarding the knee with one hand in front, push up the foot with the other, and encourage the child to straighten its leg, and to push against your hand with all its might. *Such exercises are most important.* They should be corrective of any deformity, be made interesting to the child, and be practised slowly and without excitement.

Baths—Once a day a large jugful of hot water, containing two handfuls of salt, should be poured over the whole affected limb, followed by the same quantity of cold water. Then rub thoroughly with a towel until the limb is perfectly warm and dry.

"The successful hospital management of infantile paralyses is not complete without an organised system of education be inaugurated . . a development of both mind and body, under the scientific auspices of specially trained instructors. Such advantages would render material aid to many helpless little cripples." *(Robert Jones.)*

*Compiled mainly from printed instructions provided by different Hospitals for Sick Children.

HERNIA; HEART DISEASE.

Hernia.—A hernia or rupture is a protrusion of a portion of the contents of the abdomen through the muscular wall either in the groin, in the lower part of the front of the abdomen, or at the navel. The most common contents of a hernia is a loop of bowel, which is pushed down more prominently when the child strains or cries, and which when situated at the navel is known to mothers as "starting of the navel." When the rupture is in the groin the infant at the earliest date should be made to wear a truss. The truss should be properly fitted and covered with waterproof material, and should be changed as the child grows out of it. If the rupture descends behind the truss this does not fit, and the truss should be at once changed as it is worse than useless. If the child is not cured by natural growth at the age of 4 years, the rupture should be operated upon, and nature assisted by surgical art. Every rupture in children can be cured by operation without risk at or after this age. The earlier the cure is made, the longer period has the part to get strong before it has to bear the strain of adult activities. Parents should know these facts, and should, therefore, not allow a child to grow up handicapped by such a physical defect.

Adults do not sufficiently realise the **dangers** which surround a **rupture.** A very dangerous protrusion may be small in size, so as not to be readily observed, and from its situation, a female patient, from motives of delicacy, is apt to conceal its existence. Apart from the discomfort, and pain, and weakness caused by a rupture, certain symptoms may at any time arise from the *bowel* being nipped or *strangulated.* The rupture can no longer be slipped back; the patient suffers from ACUTE INTESTINAL OBSTRUCTION which demands a speedy operation to ward off certain death. The symptoms are (1) VOMITING —persistent, of food, bile, and bowel contents in order of time; (2) PAIN—twisting, burning pain in the belly; (3) CONSTIPATION—complete, medicines if given will not act; (4) SHOCK—patient is very ill. The sooner the operation is undertaken by a competent surgeon, the greater is the chance of recovery.

Heart Disease.—The disease may be congenital (from birth) or acquired (by disease). Mothers should remember that "growing pains" in a child are often caused by an attack of RHEUMATISM, and that the heart may be quietly suffering irremediable damage at the same time. The treatment of chronic heart disease is in the main *preventive.* The teacher in the school should combine with the parent in the home to check rough play, to discourage overwork and mental strain, and to shield the child from catching cold or any infection. The diet should be generous, the clothing should be warm, flannel should be worn both winter and summer, the skin should be kept clean and the bowels regular, and hygienic precautions should be observed to preserve the general health at the highest level. Such children should be treated with great gentleness, as heart disease commonly makes the patient irritable and short-tempered. When the heart fails, as is evidenced by shortness of breath, cough, swelling of legs, etc., entire rest (? bed), for a long period becomes absolutely necessary.

RHEUMATISM IN CHILDHOOD.

Rheumatism is a very serious disease of childhood, for it is often the parent of heart disease in later life. It is rare in children under 4 years of age, and specially attacks those who are of a nervous and excitable disposition. Rheumatism is believed to be due to a *bacillus*, which enters the body in the majority of cases through an unhealthy throat. It affects children in a way different from adults. Often the attack is so mild and muscular that it is overlooked altogether, and this, unfortunately, with disastrous results to the child. There may be some complaint of pain about the limbs or joints which are apt to be mistaken for sprains or "growing pains." Often the inflammation of the joints is so trivial, and the fever so slight, that it may not be considered necessary to put the child to bed. The highest medical authorities are agreed that there can be no attack of rheumatism in the child so mild that it can be ignored without danger. Every mother should realise that every child suffering from this disease is in danger of heart complications which may make him an invalid for life.

"*Probably four-fifths of the cases of valvular heart disease in adults are due to attacks of rheumatism during childhood, and in many instances the disease of the heart is not recognised until long after the rheumatic attack. In every case of rheumatism the heart should be examined early so that the case may be promptly and properly treated. Heart involvement is as liable to develop in the mild as in the severe attacks. In some cases it is the only evidence of the presence of rheumatism.*" (*Kerley.*)

Mothers and nurses should, therefore, not regard "growing pains" as something to be expected in the growth of the child. It is time for this fallacy of the nursery to be consigned to the limbo of exploded notions, for it has lured many a mother into negligent indifference, and has crippled the heart of many a rheumatic child. In this category of things not to be slighted should be placed the limps of children, night starts, night cries, and nightmare. The significance of such events may be deeper than the mother may think, for they may herald the advent of serious disease or nervous disorder.

Rheumatism may reveal itself in many different ways. Sore throats caused by tonsillitis, pleurisy and other inflammations, St. Vitus's dance, certain red rashes and other skin eruptions, stiff neck, stiffness at the back of the thighs, and painful heel are all **rheumatic associates** which are liable to escape proper attention and medical treatment. On the other hand, the mother should not dismiss as rheumatism indefinite pains which she cannot—or would not—otherwise explain. The story of the ostrich's head points a moral.

The heart is sometimes affected in scarlet fever, diphtheria, or other infectious diseases. When the valves are injured they fail to act properly, and the heart cannot work in the same easy and efficient manner, but is apt to break down in the act of pumping blood through the body. Valvular **organic disease** of the heart is incurable; functional disorders in working are curable. Overstrain, anæmia, influenza, indigestion, tea, tobacco, etc., cause many heart disorders in the adult in the form of pain, palpitation, etc. (See p. 137.)

MENTALLY DEFECTIVE CHILDREN.

Although physical and mental defects fall into two definite classes, a child who may be included in both has very frequently to be dealt with. Many of those whose mental deficiency is slight, exhibit considerable physical deformity, and in such cases the latter must be remedied if the child is to become a useful wage-earning citizen. In the great majority, however, of physically defective children, the brain and mental powers are quite healthy.

The **causes** of mental deficiency in children must be known before *preventive treatment* can be of any value. These causes act:

1. BEFORE BIRTH—family tendency to tuberculosis; hereditary mental weakness, insanity, idiocy, epilepsy, and other nerve (neurotic) affections; parental intemperance and immorality; consanguinity of parents (blood-marriages intensify "family weaknesses"); maternal ill-health, accident, or shock.

2. AT BIRTH—premature birth; prolonged parturition with protracted pressure (perhaps use of "instruments") causing asphyxia and cerebral injury resulting in birth-palsies and mental impairment.

3. AFTER BIRTH—convulsions during teething; epilepsy; injury to head; severe illnesses, *e.g.*, whooping cough or fevers, especially if complicated by meningitis (inflammation of the brain); fright and shock (mental); poisoning of infants by alcohol or narcotics.

Many of such causes are associated with an innate predisposition to mental instability—children are born with brains so unstable as not to be able to withstand the stress of life, and often the breakdown occurs at critical periods of the child's development, *e.g.*, at teething or puberty, after a slight injury which would leave a normal child unharmed.

The causes can therefore be classed as *Congenital* or original, *Non-Congenital* or acquired, with the intermediate group of *Developmental* cases. HEREDITARY TENDENCIES to nervous diseases and to certain constitutional weaknesses, often intensified by ILL-ASSORTED MARRIAGES, are the most frequent causes of mental defect in the off-spring. So important is this factor that there has been talk in advanced circles of the "right of a child to select his own parents!" The doctor is able to diagnose the condition of the child by the following signs:—

1. **Head abnormality.**—A very small skull (*microcephalus*) denotes defect of brain development; at the school age a head measuring in its greatest circumference less than 18 inches means mental deficiency, especially if it is wedge-shaped with a narrow, rapidly receding forehead, a pointed top, and a flat back. The over large, globular head is the result in early life of "water on the brain" (*hydrocephalus*). The MONGOL type of physiognomy is seen in the mentally-feeble child with a Chinese cast of face, coarse skin, wiry hair, fissured lips and tongue, and an *unfinished* appearance about its physique. The CRETIN has a broad head, flat face, half-open mouth, protruding tongue. Other Heads are the elevated, elongated, boat-shaped, obliquely deformed.

2. **Defects in Development.**—Mental defects are often associated with physical faults, so called "stigmata" of physical failure or degeneration, *e.g.*, harelip; cleft, high, and misshapen palates; congenital defects

of ears or eyes; skin blemishes; a "pug" or indented nose; irregular and decayed teeth; heart malformation, with blueness, coldness of hands, etc.

3. **Nervous abnormality.**—Excessive movements with twitching of face or rolling of eyes; absence of natural movements with a dull, vacant expression; deficiencies of touch, sight, hearing, and speech; vagaries of temper, disposition, intelligence, or conduct.

Mental deficiency is sometimes associated with birth-palsy, and various infantile paralyses coming on late as a result of convulsions, whooping cough, etc.; with rickets and bodily ill-health the result of neglect or improper feeding; with signs of scrofula or tuberculous disease; and with the condition of cretinism which is curable by medical means.

The NON-CONGENITAL cases often have a bright expression, a head of good shape, well-made limbs, activity of movement, and fairly good speech. Many of these children, however, cannot learn much, for the eye is perpetually wandering and the attention cannot be fixed.

The **signs** of a mental defect in the infant are:—inability to support or raise a badly shaped head which often rolls hopelessly about; weakness of spine or limbs; abnormally late walking; backwardness in grasping; vacant look of eyes, inability to fix on any object, early presence of a squint; non-recognition of mother's or nurse's face; failure to notice sounds; causeless screaming, or absence of attempts to talk; absence of laughing or smiling after the age of six months; habitual protrusion of the tongue, etc.

Later, the position of the child in school is a rough guide to its intelligence. A child remains in the "infant school" until he is 7 years of age, after that he should be fit to enter the standards of an elementary school. Generally the first standard contains children of 7 to 8 years, the second those of 8 to 9 years, the third those of 9 to 10 years, and so on in proportion. This position of the child is also useful in gauging the value of the ACUTENESS OF VISION as determined by the distant type. It may be difficult to distinguish between mere *backwardness* and true mental deficiency. Dr. West suggested a useful guide—*a mentally defective child would be abnormal for any age, whereas a backward child is merely abnormal for its own age.* A backward child would be normal for one of younger age; marked mental weakness (dating from infancy) as compared with persons of the same age, suggests idiocy. Imbecility is only a less pronounced form of idiocy. A merely "backward" or slow child should not be too hastily pronounced feeble-minded or an imbecile.

In moral imbecility there is preponderant moral weakness. A marked moral defect may exist with little or no intellectual or physical weakness. The **moral imbecile** is the despair of his (or her) parents; "he seems to be the ill-fated product of inherited nervous instability and ancestral criminal instincts."

With regard to **intellectual** disabilities the feeble-minded are characterised by imperfect perception, attention and pertinacity, weakness of initiative, deficient control, poor association of ideas, and feeble memory. The deficient control frequently leads to a state of mental instability, in consequence of which, sudden impulsive outbreaks of temper and violence are common.

The **Principles of Treatment** on which to proceed are well described by Séguin. "As soon as any function is set down as deficient at its due time of development, the cause must be sought and combated; if external, removed; if seated in the nervous apparatus, counteracted by the earliest course of training and hygienic measures. The arm of the mother becomes a swing or a supporter; her hand, a monitor or a compressor; her eye, a stimulant or a director of the distracted look; the cradle is converted into a class-room or gymnasium." PROPER FEEDING is of first importance. Baths, with friction, should be frequent to promote the healthy action of the SKIN, and to aid the sluggish circulation. The child should be encouraged to EXERCISE its limbs on the "kicking rug." "Teaching to walk will, of course, be a more tedious process than with ordinary children, but the faith which works by love will accomplish miracles, whereas neglect will too often entail permanent disability." *(Shuttleworth).* CLEANLY HABITS must be enforced by patient perseverance in methods of physical and moral suasion, sanitary facilities and suitable clothing being provided, and the liquid taken towards bed-time restricted in amount. The approach of puberty (15 years) is an anxious time in the management of the feeble-minded of both sexes to guard against abuses of the animal instincts then awakened. Exercises and employment in the open air are now of special value; the child must not be confined to its nursery or its "back yard," nor be sent to bed in the day-time as a punishment.

With regard to the medical treatment it should be noted that these children are, as a rule, feeble in body as well as in mind, and therefore more liable to bodily defects and other nervous disorders. The constitution must be fortified against tubercular disease by hygienic environment, judicious feeding, cod-liver oil, malt extract, and Parrish's chemical food combined with the syrup of iodide of iron, and—medical supervision. **Epilepsy** is stated to occur in 25 per cent. of all weak-minded children. Its careful treatment by diet, medicine, and *out-door* occupation is of *enormous importance*, because it sometimes causes, and always aggravates, mental weakness. In the milder cases of enfeeblement associated with epilepsy, the successful treatment of the epilepsy is followed by considerable mental improvement, and should the cessation of fits be permanent, the mental deficiency may gradually disappear. **Rickets** should be prevented in a child, and if present, cured as speedily as possible. Physical deformities, surgical diseases, affections of skin, eye, ear, throat, etc., may call for surgical or medical treatment, and the mother should note that the removal of adenoids is often followed by mental benefit. **Cretinism** is immediately benefited by the administration of thyroid gland.

Though little can be done by a medical man for the mental development of these children, "You can do much for their physical state; you can remove obstacles out of the way of the feeble brain. You can remove adenoids, which make it difficult for them to hear; you can order them spectacles, and make it easy for them to see; you can . . make it easier for them to use their limbs [if paralysed]. If the child is rickety, you can treat the rickets." *(Dr. Hutchison).*

The teacher in the school, and the mother in the home, can do much.

As Dr. Fletcher Beach says, the treatment consists of a judicious combination of hygienic, medical, physical, moral, and intellectual treatment. As there are PHYSICAL imperfections as well as mental deficiencies, it is necessary to improve the former if we would ameliorate the latter condition. The want of co-ordinating power in the muscles has to be improved by appropriate remedies. The muscular system being strengthened, the hands have less difficulty in performing any simple act; walking is improved; the eyes wander less; and listlessness and inertness to a great extent disappears. The MORAL treatment should go on side by side with the physical and intellectual training. Ideas of justice, duty, self-reliance, prudence, forethought, and perseverance have to be inculcated. Obedience has to be taught and efforts made to impart good temper and affection. With regard to the INTELLECTUAL training, we must remember that mentally defective children have to be taught ideas and motives which ordinary children pick up for themselves. The latter are endowed with the full use of their senses, while in the former these are badly developed and have to be trained. It is usual to commence by educating the senses, and as the tactile function is the most important, we begin by educating the sense of touch. Then follows the education of sight, hearing, taste, and smell. In every case it is necessary to proceed from the simple to the complex, teaching ideas by the use of concrete forms, and not by abstract notions. Speech has to be educated by means of a speech drill.

The senses having been educated and the speech improved, we advance to higher branches of learning, such as reading, writing, arithmetic, etc. When good progress has been made, the boys may be taught carpentering and gardening, and the girls sewing and domestic work. It is a good plan to alternate the industrial with the purely intellectual training. Much has been done by the Kindergarten methods in teaching these children in special institutions or schools to use their muscles, and to make the best use of the feeble brain power they have. This instruction is very necessary.

Unless something can be done to better these unfortunates, they become a burden on society, and centres for the propagation of the unfit.

Some *practical hints* may be found useful:—(1) Perseverance is the keynote, careful and persistent training is an essential; (2) those cases which look the worst often improve the most; (3) each case needs to be specially studied and treated; some learn more by ear, others by sight, and the education has to be adapted to the requirements of each—note that parrot-knowledge is a useless acquisition; (4) the child improves most rapidly when trained in a special institution or school. Here he is on the same mental plane as the others, and the spirit of emulation is aroused; (5) the training, both mental and physical, should be commenced as early as possible, for the older the child is when the training begins, the less chance there is of ultimate improvement. Many mothers have been misled by the idea that at the age of seven or fourteen there will be an abrupt change from mental feebleness to mental strength. This result is, however, seemingly impossible, and certainly contrary to experience.

Advice to the Mothers of Mentally Defective Children.*

Your child needs to be carefully taught to do things that other children do without teaching. In time he may learn to do them quite well if you only persevere.

Remember that improvement *cannot* be sudden; it can only come gradually by getting him to do over and over again little things that he is not good at. Notice, therefore, what things he cannot do as well as other children, and try to teach him to do them better one by one. Do not go on doing for him anything that you can possibly get him to do for himself—such as feeding or dressing.

Encourage him especially in doing those things that he finds a *little* difficult, but do not give him anything to do that is quite too hard for him. Utter failure will discourage him, while success in *anything* that is not mischief will do him a great deal of good.

Always encourage anything harmless that he does of his own accord. Such things please him far more than what you tell him to do, and are also better for him; but *never* let him even begin to get into a habit of making faces, or of making any noises that you would not like your other children to learn.

If he seems to notice too little, encourage him to look at, listen to, or handle anything that he is taken up with. Any sort of interest helps to brighten him.

Do your best to keep his body as strong as possible by carefully seeing to his food and clothing, and by taking him into the fresh air as much as you can.

Nobody knows how much he may improve; that will depend largely on the amount of trouble and patience you spend on him.

[Directions issued at the clinique of Dr. John Thomson, Edinburgh.]

The mother must recognise and *admit* that her child is mentally defective, and be ready to co-operate with the teacher and doctor in its special treatment. Without this triple co-operation little permanent good can be effected, and parental indifference in the home can undo much good accomplished by expert tuition in the special schools. Teach the child to respect himself, make him recognise that he lives under laws to which he *must* conform. Moral defects require firm discipline combined with kindness and tact. Cultivate the child's moral sense of right and wrong; encourage him to exercise self-control; explain to the child that concentration of energy is necessary for him to earn his living as a man. Try to make him *vain* of his good qualities, and to take a *pride* in his superiority to the weakness of others! Train him to be something; provide him with an objective—that he works to earn money, with an ideal—that he learns so as to behave as a grown-up man! Find him a suitable occupation—a clumsy fingered child may make a gardener; a child with neat fingers a book-binder or wood-worker. Extol the beauty of the humblest work—teach him never to despise labour of any kind, for the child may be unfitted for anything but the most menial tasks. If a girl is defective, teach her that every woman takes a pride in housework, and that to set a table well is an act of distinction. The Individuality of the child must be kept sacred, and the production of the state of mental equilibrium—ideal sanity—be regarded as the goal of all educational methods.

Coaxing, not coercion, must be the guiding principle. With the mentally deficient "force is no remedy"; the "cowed" child will be a cowardly child. On the other hand, if a child is pampered because he is weak, he will grow still weaker; if humoured because he is cross, he will become very passionate. Mothers may rejoice to know that many helpers are trying to lighten her load of misery.

*Teachers may consult with advantage "Mentally-Deficient Children: Their Treatment and Training," by G. E. Shuttleworth, B.A., M.D., &c.

SOME NERVOUS DISORDERS OF CHILDREN.

The Nervous System in Childhood should be studied. In the child the higher centres of the brain are imperfectly developed, and as a result want of control of the higher centres over the lower exists in early life. The brain of the child is an immature, unstable, and highly impressionable structure; it is "still in the making"; it has not settled down to the stereotyped form of the developed adult. The nerve wires which proceed from the brain to the different parts of the body are imperfectly formed and differentiated in function; the nervous messages which they convey are therefore apt to get mixed through imperfect insulation or "crossing" of the wires. Hence the muscular inco-ordination, *i.e.*, the imperfect control over the muscles; the nervousness of the child, its liability to fits, twitches, spasms, squints, and many nervous disorders; its proneness to emotional extravagances and explosive moods and tempers; the instability, irritability and exhaustibility of its nervous system.

There is a class of children whose nervous systems seem to be in a chronic state of unstable equilibrium. Children of this type are described as "nervous" by their parents; the medical man stigmatises them as **neurotic.** They are emotional, excitable, restless, capricious in their likes and dislikes, mercurial in their temperament. They are the disturbers of the domestic peace; strap-hangers on the borderland of health and disease. When ill they present manifestations which alarm the mother and puzzle the practitioner. Their nervous constitution is displayed by functional disturbances which are designated neurotic or hysterical. Some forms arise in infancy, most commonly they occur from the age of nine up to fourteen years. The attack may follow an illness or injury, or be the result of a fright or shock of some kind. In other cases there is no apparent exciting cause.

RICKETS and RHEUMATISM predispose children to all forms of functional nervous disease, and the symptoms often subside when these diseases are treated.

There are two main types of neurotic children:—(1) The unrestrained emotional type; (2) the restrained emotional type.

"In the first type, intelligence is normal or above the average. The characteristics are: marked timidity and restless energy." The subjects are high-spirited, imaginative, impetuous, enthusiastic, and demonstrative; they are easily discouraged, apprehensive, sufferers from remorse, worried by trifles, fitful in work, disorderly in method, resentful of discipline, and lacking in balance and judgment. These children have their share of brains, but lack the balance of character; they are liable to nervous disorders and functional derangement without end. "They may develop all forms of hysteria or neurasthenia in after life; they may become alcoholics or drug takers; suicidal, homicidal, and insane."

"In the second type, emotions are very strongly felt, but the powers of control are equally strong. Such children are observant, intelligent, but so reticent that they often pass for being dull, sullen, and obstinate."* They are often sensitive and shy, solitary in habits, introspective, imaginative, fearful, scrupulous, and superstitious. They brood over

*Extracts from "Functional Nervous Disorders of Children," by Dr. Leonard Guthrie. The writer is much indebted to this excellent work in the compilation of these notes.

slights, yet are slow to give offence, take all things seriously, and have little sense of humour. They are apt to become dull and sour, disappointed and depressed, and recruits to the ranks of neurasthenics and hypochondriacs.

Neurasthenia.—Frequently it is developed by the strain of school life. The nervous system of neurotic children is hyper-sensitive; it is morbidly irritable to impressions; it has an abnormal capacity for feeling; this is why these children are the subjects of mental overstrain, and nervous breakdown the result of mental and physical exhaustion. It is necessary to recognize the early symptoms and tendencies toward this disease, "to save such children the life-long ill health which has been the lot of many endowed with the highest order of intellect and genius." The environment of the neurotic child as well as his personality has always to be considered in relation to his ailments. The perpetuation of this mischief may be one result of domestic mismanagement, or of the masterly lack of discernment on the part of the child's teacher, who fails to see that "a child may be suffering from school life and incapacitated thereby for school work." In severe cases a course of Weir-Mitchell treatment—rest, isolation, feeding-up, and massage—will yield the best result. Note that recurrences will certainly take place if the child is again exposed to mental worry and strain. For neurasthenia is the outcome of the neurotic temperament when subjected to unfavourable conditions and surroundings.

At this point it might prove helpful to some to note the condition of neurasthenia in the adult. This condition of nervous exhaustion is largely the product of present day strain and stress. It is caused by (1) excessive work, mental or physical, especially if of a worrying nature; (2) sexual excess; other excesses; (3) illness, especially influenza; (4) poisons, *e.g.*, alcohol, tobacco; (5) stomach disorders; (6) eye strain from uncorrected optical error, *e.g.*, hypermetropia or astigmatism; (7) injury and shock, thus it may follow a railway accident; (8) brain disorder, allied to melancholia, when in the form of hypochondriacal neurasthenia. It is characterised by headache, insomnia with "starts," inability to work, and irritability. The highest centres of the brain are those the seat of control; in nervous exhaustion restraint is lessened, and the patient reacts to little things (stimuli) in a morbidly sensitive manner. He is then called "nervous." There are pains in the nape of the neck, back, and limbs; general muscular weakness; a chronic state of tire; cold hands and feet; nervous disturbances of other systems.

The treatment consists in removing the cause; in rest, change of air, diversion, regulated exercise, careful dieting, nerve tonics, and in the worst cases a course of Weir-Mitchell treatment.

Hysteria.—Hysteria and neurasthenia are closely allied and are often met together. It is not uncommon in late childhood, and may occur in boys quite as easily as girls. The likeliest subjects to be attacked are children who are under-fed, over-wrought, anæmic, and of neurotic parentage. The higher brain centres are unduly excitable

and *explosive*, and their functional derangement may give rise to extraordinary paralyses or spasms, and to disturbances of movement or sensation which may mimic real diseases of the body structure. A badly trained, ill-disciplined, emotional, and fractious child will not develop into an adult best fitted to face life's rough battles, whereas a child with a nervous temperament who has been taught to exercise its will—to govern itself by intelligent rule rather than allow itself to be badgered by freakish fancies—will become one of a class which is said to be "the salt of the earth."

Headache.—In every case it should be regarded as a symptom of some nervous disorder. Its commonest causes are (1) EYE STRAIN, remediable by well-fitting spectacles prescribed by a *competent* medical man. The child is often said to be "bilious"; the condition of strain of the eyes is commonly overlooked (consult the writer's "Eye Strain and Eyesight"); (2) DISEASE of EAR, NOSE, and THROAT—a running nose is often attended with a headache over forehead; (3) DISEASE of TEETH—in adults, diseased *back* teeth are often responsible for referred pain at the *back* of the head; (4) Unhealthy states of the STOMACH and BOWELS—wrong feeding, bad teeth, indigestion and constipation (biliousness), are the common associates of headaches; (5) BRAIN FATIGUE—nervous children about 14 years of age are common sufferers, especially if they are ill-fed, anæmic, or rheumatic; (6) FOUL AIR at home or in school; (7) MIGRAINE—sick headache—a recurring nervous disorder allied to epilepsy. The pain is severe and may be preceded by disorders of vision, sensation, speech, etc. The sufferer is often physically and mentally active. "It is certainly a family affection and one of the neuropathic inheritances!" A healthy child should not suffer from headaches, if it does, something is wrong. A bad headache in a child not subject to them may mean the onset of some acute disease, such as measles or pneumonia.

Chorea.—Known as "St. Vitus's Dance." It is a nervous disorder common in school children (girls especially) over 7 years of age, and is closely allied to acute rheumatism which often precedes, follows, or even complicates the disease. A predisposing cause is the nervous temperament; a family history of hysteria, epilepsy, and insanity is not uncommon. In the mild cases the child simply appears to be clumsy and to drop things; in the marked cases there are obvious signs in the jerky and irregular movements, in the mental change and emotional disturbance. The child becomes inattentive, forgetful, foolish; irritable, excitable, or quarrelsome. The twitchings—a "caricature of natural movements," the result of an "insanity of muscle"—may be limited to the face, or one limb, or one side of the body, or they may be severe and general and be accompanied by emaciation and grave constitutional disorder. Note the unconscious grimaces, the "making faces"; the speech defect; the peculiar jerking out of the tongue and the snapping together of the teeth on its withdrawal; the twitchings of the hands and fingers when held out; the weakness or seeming paralysis which often follows in the parts attacked.

The essential part of the treatment is *rest* and quiet, absolute for

body and mind, the patient being isolated whenever possible. If the case is at all severe, bed is the best place. The child should be very *well fed*, and carefully nursed—especially if the movements are violent.

Mothers should **note** that inflammation of the **heart,** which may subsequently give rise to serious and incurable *valvular disease of the heart*, is more constantly found in chorea than in any other disease, even rheumatic fever. This is why a mild first attack should be treated by bed lest it become more severe. The patient should be kept to bed until spontaneous movements have ceased for a week. The period of rest also depends on the extent the heart is implicated. For cases of what Dr. Leonard Guthrie has called "residual chorea," certain exercises and drilling are useful. "A child can usually be called cured when it can build a two-storied house of cards."

The condition lasts from 3 weeks to 3 months, the severest cases recovering the most quickly. No child should be allowed to return to school while any traces of the disease are noticeable, nor, indeed, until his system has been thoroughly restored to health.

Habit-Spasm.—In this condition there are twitchings of the face or other parts of the body: blinking and winking, pulling of faces, sniffing and grunting, shrugging of shoulders, and curious contortions of the face and body. The cause can generally be found in a child's nervous temperament subjected to some irritation, *e.g.*, eye strain, ear affections, enlarged tonsils, adenoids, worms, troublesome teeth, pressure at school, or in a child depressed by some illness, or upset by some shock or fright. The treatment of the case consists in removal of the irritation by prescription of spectacles, operation, etc. If school lessons worry the child, these must be stopped for a time. The general health of the child should be improved by wholesome diet, tonics, a quiet rational mode of life, long hours of sleep, and periods of rest during the day. The less notice taken of the movements the better. There are, however, certain cases where the health is good, and tricks and antics are performed from inattention, carelessness, or mimicry. These are often seen in slouching children with humped shoulders and clumsy gait. Such cases call for moral discipline and physical drill.

Night Terrors.—The neurotic infant is a bad sleeper. The most trivial ailment renders him feverish and sleepless. Nervous infants should be kept quiet, and should not be pacified with soothing syrups. Night terrors are common in older children. The child wakes up in the night screaming, he "sees visions," does not know its relatives, his face expresses the wildest alarm. The period of terror lasts from a few moments to half-an-hour. The child then regains consciousness, and falls more or less soundly to sleep. A night terror (visionary hallucination) of one child may represent the simple nightmare (terrible dream) of another. Such a child must be fed and tended very carefully, blood-curdling stories should be withheld from him, and he should not be compelled to go to sleep in the dark. The doctor might be able to discover a cause for the attacks in mental strain (requiring educational regulation), eye strain (perhaps requiring spectacles for its relief), enlarged tonsils or adenoids (requiring operation), deranged stomach or bowels (requiring physicking), etc.

The Management of Nervous Children.*

The Fears of Neurotic Children.—Fear does not necessarily imply cowardice in the presence of physical pain or danger. A child may bear having a tooth extracted, . . yet be utterly cowed by a harsh word or look, or by ridicule. . . Fear . . may have disastrous (and permanent) effects on mind and health. . . Fear in a child may be the end and not the beginning of wisdom. It is of all emotions the one most calculated to produce lasting effect on a neurotic child. It should be recognized and met with sympathy, judicious treatment and management. . . Fear implies powers of imagination, and the child who suffers is the most imaginative . . Nurse's tales and awful pictures are but matches which fire the train of their imagination. Neurotic children nowadays . . need a religion more cheering, and treatment more lenient towards their moral defects than were ever thought suitable by our forefathers ; the brightest and most comforting side of religious faiths should be presented to children who are by nature timid, imaginative, and apprehensive. Exaggerated statements of all kinds are injurious to neurotic emotional children. Unnatural remorse for misdemeanours is a feature in neurotic children. They are prone to worry over trifles and are particularly liable to morbid apprehensions. Corporal punishment should be condemned in the case of emotional children. Neurotic children are keenly alive to their own imperfections . . and the mental punishment which their sins entail is often greater than they can bear. Shouting schoolmasters cannot teach neurotic children . . pedagogic thunder never fails to reduce the more sensitive pupil's energies to nil.

Fretting and Home-sickness.—Children in hospital, though convalescent, will often fail to thrive . . Experienced nurses recognize that they are merely fretting or suffering from "hospitalism." In most children home-sickness is but a passing pang. It does not always follow that sending a child to school makes a man of him. "I have known timid, home-sick children to pass through years of misery at school." . . The signs of grief are not discoverable post-mortem ; in life they are sufficiently obvious and should be recognized. Schoolmasters are in some respects singularly shortsighted . . it is less trouble to blame and chasten than to inquire . . hastiness and irascibility dissipate a nervous child's wits.

Moral Failings of Neurotic Children.—Bad conduct is either morbid or vicious ; either evidence of ill-health or want of moral sense. After exhausting illnesses children often seem to lose moral control and give great anxiety by their provoking delinquencies . . in the majority, health and moral sense under judicious management are re-established in time. Moral lapses at the age of puberty are not uncommon, and may be simply signs of nervous instability not to be regarded too seriously. Mitigating circumstances should be discovered—age, ancestry, environment, nature of act, and the child himself. A child of three has little or no moral sense ; at eight it should have definite notions of right and wrong. The importance of a bad family history of functional disorders such as hysteria, epilepsy, alcoholism, and insanity [or of organic nerve degeneration], can hardly be over-estimated in a case of persistent and gross misconduct in a child aged upwards of eight . . A clue to children's ill-health, or bad behaviour, may often be found in the character of their parents, nurses, teachers, and companions. Neurotic mothers may learn to dislike their neurotic children as discreditable reflections upon themselves, and therefore ill-treat them. . . Bromides are good for all neurotic children, but sometimes they act still better when given to the parent.

Cruelty.—In some neurotic subjects the sight of suffering begets desire to cause it, in others an equally cruel desire to avenge it. A cruel child may turn out either a ruffian or a persecuting reformer. *Temper.*—Fits of violent temper are common ; a nervous child is morbidly sensitive and lacks self-control. "Good babies who never cry are seldom healthy." Frequently, passionateness is an indication of nervous instability resulting from severe illness. Nicknames should be avoided in the family circle if resented by a neurotic child. Few things provoke an emotional child more than drawing attention to its faults in public. A sensitive child resents ridicule, and is suspicious of questioning and heavy humour. *Dishonesty.*—It must be remembered that one theft does not make a robber (nor one lie make a liar). Moral impulses may not be controlled by sense of proportion between them and the means by which they take effect. *Untruthfulness.*—Timidity is often the cause of untruthfulness. Neurotic instability and not inherent vice may account for much misconduct.

*Extracted from "Functional Nervous Diseases of Children," by Dr. Leonard Guthrie.

MENTAL FATIGUE: OVERSTRAIN IN EDUCATION.

The effects are similar to those of mental strain in adults, but more silent. The child may look weary and worried; appears idle, inattentive, or stupid; is irritable or passionate, querulous or depressed, and is lacking in concentration and self-control. [Note that irritability does not always mean bad temper; it is often a symptom of a nervous debility, which it serves to aggravate, and is perhaps the passing product of an attack of influenza.] There is a want of tone and balance about the muscular system; there is a general fidgetiness; twitchings are commonly noticed about the angles of the mouth; the tongue may be tremulous and the speech stammering; the hand assumes a feeble pose, and we may often see or feel finger twitches. In more severe cases, and especially with girls, the symptoms may pass into hysteria or St. Vitus's dance. Headache is frequent, as a rule sleep is disturbed, the child "babbles scraps of Greek . . ," and night terrors sometimes occur. These symptoms are often associated with physical signs of ill-health as a sallow complexion, anæmia, constipation, and a loss, or perversion, of appetite.

Mental overstrain is commonly linked with emotional extravagances; competition breeds jealousy, etc.; examination cramming is allied with fear of failure; failure means feelings of disappointment and enmity. Emotional exhaustion is the bankrupt sister of intellectual fatigue.

Grievous disappointment of hopes and ambitions would sometimes be saved if these symptoms of nervous prostration and brain exhaustion were recognised early and attributed to their real cause. Mental overstrain is rare among the children at elementary schools. Deficient food, insanitary condition of home life, or defect of eyesight more commonly explains the symptoms. Over-pressure would seem to be the more marked in the preparatory schools, "and there is much reason to fear that not a few promising boys, approaching the trying epoch of puberty, are sacrificed to the Moloch of competitive examination for entrance scholarships." *(Shuttleworth).*

Parents should understand that it makes very little difference to the ordinary man or woman, so far as their mental attainments go, how they were ranked as scholars when young children. On the other hand, the effort necessary to be made by a sensitive, not over-brilliant child to keep a good place among his fellows may have a very serious physical effect which will hamper the individual in his adult life. "*They are conceited all the forenoon of life, and stupid all its afternoon . . the cheerfulness, the tenacity of purpose, the power of work which makes a successful man what he is, must often be placed to the credit, not of his hours of industry, but to that of his hours of illness, in boyhood" (Prof. Huxley).*

As regards prevention much rests with the parents who are too apt to shirk responsibility and throw all blame upon the teachers. The proper exercise of talents is a healthy occupation. High intellectual quality does not necessarily lead to mental overstrain. Clever children wisely educated seldom show signs of mental fatigue. Note, however, that *precocious children* are often the offspring of a neurotic stock; they are mentally over-developed, and often physically under-

developed; therefore nervous troubles are more frequent among them—especially if they are PRESSED IN ADVANCE of their years and strength. It is the hours spent in the irksome drudgery of "taking pains" that tell. It is the *worry of fret-work* that exhausts and kills, although energy spent in any form of application, or industry, is in itself exhausting in various degrees. Some are so constituted (a great genius like Darwin was) that they can only take pains for brief periods. A child incapable of prolonged mental concentration should, therefore, not be regarded as culpably lazy, but rather as one easily tired.

Educational overstrain may result from :—

(1) The imposition of heavy tasks on slippery memories; excessive tasks make study distasteful; defeat of an end is thus ensured.
(2) Enforced concentration on uncongenial subjects; it is always harder to row against the stream.
(3) Exacting practical industry from those who are by nature contemplative, thoughtful and imaginative.
(4) Excessive hours of study, especially during spurts of growth and development, or after acute illnesses, *e.g.*, infectious fevers.
(5) Deficiency of systematic out-door exercise and recreation.
(6) Disregard of physiological functions differentiating the capacity for work at certain times of girls as compared with boys. "Puberty with girls is a period of profound nervous and neuro-psychological import."
(7) These predisposing causes must not be overlooked: neurotic heredity with excitable temperament; the influence of pernicious practices during the period of sexual development; menstrual disorders; neglect; bad feeding. Bad ventilation, bad lighting, improper desks, and injurious attitudes—with perhaps eye strain—are common causes of rapid fatigue in schools.

Fact cramming cramps the mind and strains the intellect, and does not constitute true education. Herbert Spencer wrote truly "It is not the knowledge stored up as *intellectual fat* which is of value, but that which is turned into *intellectual muscle*."

Education means not a "putting in" but a "drawing out." It includes—as Paley puts it—every preparation that is made in our youth for the sequel of our lives. Plato asked, "Is not that the best education which gives to the mind and to the body all the force, all the beauty, and all the perfection of which they are capable?" The *acquisition* of knowledge is not everything, the *organization* of knowledge is the essential matter. Education suggests a cultivation rather than a cramming, and the teacher acting as an improver rather than as an imparter. "You cannot ladle grammar, arithmetic, or geography into a child's brain as you would brimstone and treacle into his stomach." True education recognises that children are not all cast in the same mould, and that instruction should be adapted to idiosyncracies and proportioned to varying capacities; and bearing in mind the physiological interdependence of body and mental development, adopts methods of instruction which will produce in a given individual the most favourable evolution possible of all the faculties both of mind and body. "Virtue can only be taught by virtue" *(Plato)*.

Backwardness in children may be due to illness, deafness, defective vision, adenoids and enlarged tonsils, mental deficiency, delayed development, bad attendance at school, culpable laziness.

Slowness in children may be accounted for by feeble mental power, delayed development of the higher mental centres of the brain, deafness, defective sight, and bad nourishment.

It is to be noted that a backward child is not necessarily slow; some children, though clever, are always slow. An unsatisfied stomach also means an unreceptive mind; a body fatigued through want of food is a mind demented through lack of nourishment. To starve the body is to cheat the mind; to stint the youth is to cripple the man. These primitive truths are beginning to receive practical recognition.

Some memorize best the things which they see, and others those which they hear. Memory in some is automatic and effortless, in others it is a laborious process, in which association of ideas may have to play an important part. In such cases artificial aids to memory are not to be despised. Marked capacity for mechanical reproduction from memory is often accompanied by weak powers of perception and judgment, while to pupils of average mental capacity memory work is highly fatiguing. A bad VISUAL MEMORY (things seen best remembered) may be due to eye defects which may lead to eyestrain, prostrating headaches, and mental overstrain. A bad AUDITORY MEMORY (things heard best remembered) may be due to deafness, and the child appear to be dull and stupid. Such artificial stupidity should be recognised and its cause removed. Overtaxing the memory is a fruitful cause of mental breakdown; when the memory is weakened through some physical fault, the stress is made worse.

Most intelligent children seek variety, and resent specialism. Unremitting concentration on special subjects may lead to brain exhaustion, especially when the subjects are chosen without considering the pupil's natural aptitudes. A child's brain can be more or less rested by exercising different portions of it in rotation, and by a suitable alternation of subjects with due regard to their fatiguing qualities. In this way much can be done to obviate mental fatigue, and so save the scholar from a nervous breakdown.

Nervous tissue is, relatively to muscular fibre, far more immature and less resistant in the young child, and it is then easily stimulated and rapidly exhausted. Continued muscular exertion exhausts also the nervous mechanism, for in the course of physical exertion the work accomplished by the muscle decreases gradually, while as the muscle becomes fatigued, a greater nerve stimulus is required for further action. Exercise combined with attention, as in drill, has not the same recuperative effect on the nervous system as free open air play, and gymnastics is exhausting to nervous and muscular systems alike. It is a bad plan to get as much as possible out of a child; there should always be a certain amount of vital energy in hand for emergencies. To do its work the brain needs a full and active blood supply; this may be taken at the expense of the rest of the body. In children the physical state of the body is a good guide to the mental condition. If the body is tired the mind is in no fit state to absorb knowledge. The thin, narrow-chested, delicate youth perhaps with strained eyes, and a spinal curvature, and nearly always with a good school record, is nine times out of ten a **preventable mistake.**

With regard to treatment. The injurious causes at work must be recognised and remedied without delay. To fag a child's brain is fatuous policy; a term's brain rest is not always time wasted.

THE STUDY OF CHILDREN.

Although the actual diagnosis of mental conditions is essentially a matter for medical men, yet the teacher should be trained to recognise abnormalities revealed by Dr. Warner's tests.* As pointed out by this authority, the study of movement affords the readiest means of studying brain action, and nerve-signs indicative of ill-balance of the body parts are useful to teachers in explaining causes of child dulness.

1. The child is asked to put out his **hands** with the palm downwards, and to spread the fingers. The balance of the hands, arms, spine, and shoulders is then observed, any peculiarities being noted. A strong and healthy child of five years and upwards will hold his hand straight, and fairly straight with the arm and shoulder, all the parts being on the same level—*the straight hand* (*b*). In nervous, excitable, and tense children the wrist is slightly dropped and the fingers bent upwards—*the nervous hand* (*a*); in exhausted children the whole hand and wrist may drop—*the feeble hand* (*c*). Irritability of the brain from fatigue is also revealed by the nervous twitching of the fingers. Children with the nervous hand are often hot-tempered but affectionate, tooth-grinders, and very liable to recurrent headaches.

2. There are forms of weakness and fatigue indicated by weakness of the muscles of the **spine.** Observe the child in profile so that the curves of the spine can be seen. When the hands are held out it will be observed that the shoulders are thrown more backwards, and the spine becomes more arched forwards, in the case of the weak child as compared with that of the strong. The postures of the spine are well worthy of study, for lateral curvature may be suggested by asymmetrical postures of the body, *e.g.*, a child, when at work, constantly bending to one side, making one shoulder higher than the other. Stooping over work, or looking at the work obliquely with a lateral bending of the spine, suggests the optical error of short sight or astigmatism, and indicates the need for expert examination of the child's eyes.

3. If the muscles which support the head and spine are not strongly energized, the **head** leans forward or to one side—a powerless state (brain tire plus muscular relaxation) in accord with the bending backwards of the spine, and a condition exemplified by the tired man going to sleep "doubled up" in a chair.

4. The **face** is a most accurate index of brain action. The muscles of the face are supplied with motor nerve-currents from the brain by a nerve called the facial. The *frontal* muscles overacting and causing horizontal creases in the forehead is a movement not of an intellectual kind. Knitting of the eyebrows causing vertical furrows is expressive of mental action, and is often associated with a "status of mental stress which may be discovered on further inquiry." When the muscle around the eye is relaxed the lower lid appears baggy, and there is a fulness about the eyes. Fatigue and exhaustion are indicated in the face by a weak, toneless condition of the muscles, and too little mobility or change of expression; a look of depression, heaviness, fulness about the eyes, especially about the under eyelids; "a child looks as if he had a headache," a sign best seen in the profile view. "Mental anxiety is expressed mainly in the upper zone of the face, by vertical furrows. In the facial expression of pain originating in the limbs or body, we see the signs mainly in the lower zone, the angles of the mouth being drawn down. In the face of a mother who has just lost her child, the mother's pain is shown by depression of the angles of the mouth; some years after the loss, when memory has idealized the child, references to the sorrow causes the expression of mental pain in the forehead."

5. Note whether the **expression** is defective or faulty in any way. *Frowning* is a bad sign, commoner in boys than girls, and is indicative of an unoccupied mind. Knitting the eyebrows is often expressive of mental action, especially a puzzled mind. There may be restless, uncontrolled movements of the eyes, fixation of an object being bad. If squint exists it should be treated at the earliest moment. In the lower part of the face is seen *grinning* or *over-smiling.* One-sided, silly movements in the faces of children are habits which should be checked, if possible, in early life. The mouth may be kept open; this may be from feebleness and drooping of the jaw, or due to chronic nasal obstruction, the result of adenoids.

*Consult "The Children: How to Study Them," by Dr. Francis Warner.

PECULIAR AND EXCEPTIONAL CHILDREN.

According to E. W. Bohannon (see Pedag. Sem. Vol. IV, 1896) these children can be classed under headings which express the salient peculiarity of any particular child :—

TALL, HEAVY, AND STOUT.—They generally associate with older children to escape the undue attention which their size provokes. Quite as general also is the custom of dressing them like their associates. Heavier work, and their treatment as if really older, may account largely for their apparent greater maturity.

SMALL.—The opposite results obtain. Such people are usually dressed as if younger than they really are. Some are very active in mind and body, but a good many are feeble-minded or otherwise degenerate.

STRONG.—Frequently leaders of their associates. Their wrong doings seem to be the result of an extra supply of energy and not to be premeditated.

BODILY WEAK.—In physically defective children, mental defect is common. There are the DEFT, AGILE, CLUMSY classes: children grouped according to their muscular activity.

BEAUTIFUL.—In no other class is the evil effect of unusual attention so apparent.

"In very few instances has it not been the most obvious cause in producing vanity and its related qualities, as selfishness, unkindness, haughtiness, pride. They have been 'petted,' 'indulged,' 'flattered.' . . . Perhaps those who are guilty of doing such incalculable harm to helpless children excuse themselves upon the ground that it is out of good-will and admiration, but none the less it is a great wrong, and one which common sense would do much to correct."

CLEAN AND DAINTY.—The associated peculiarities often met with in these cases are orderliness, obedience, truthfulness, slowness, nervousness, fussiness. The children are not unfrequently delicate, and are often beautiful. Sometimes the peculiarity becomes distinctly morbid, as when a child washes his hands every few minutes, or will not join in play lest he may soil his clothes.

DIRTY.—These children are often healthy and energetic, but disorderly and disobedient.

UGLY, DEFORMED.—Duncan ("Sterility in Women") has observed that the first and last born are much more liable to be defective, both mentally and physically, than are others. Warner found in London school children that 8·27 per cent. of the physical anomalies belonged to boys, while 6·78 per cent. belonged to girls. This is in harmony with the observation that woman is the more conservative sex.

SENSE KEENNESS AND MENTAL PRECOCITY.—Quiet surroundings, rather than such as stimulate, seem better for them. ["In many ways a genius differs from ordinary children ; the very faults and nervousness may be trained to become admirable qualities—sensitiveness and mobility of mind—and the fidgety child may become an active man."]

SENSE, MENTAL, AND SPEECH DEFECT.—All would be better off if provided with special instruction, and most are in imperative need of it. The public school as now conducted is hardly the place for such.

[Children of slight brain defect tend to become passionate, to pick up bad habits and to practise them; they incline towards criminality, or if too feeble, they drift as social failures into ne'er-do-welldom or pauperism. "Neglect in these matters does lead to unintentional cruelty to children, and what I think more important, *the educational neglect of wrong-brained children.* This is due to ignorance, for which the public and the school managers are responsible." *Dr. Warner.*]

Nervous, delicate, and unstable constitutions.—The apparent disregard of truth, and the manifestation of a meddlesome spirit, is perhaps due to the want of self-control. Dr. Thomas observes "If the child, more than the man does, yields so easily to all the suggestions of example, obeys sometimes the least impulse, it is because his power of reflection is still very feeble, it is because he has no marked personality, no profound habitudes, no fixed rules of conduct capable of orienting his life . . . the lower races resemble the child in this respect. The same facts may be observed in the case of feeble minds, in the case of those who possess an organisation sickly, excessively impressionable, and suited to receive all imprints. Hence the mobility of their character; hence also the absolute empire which certain persons have over them." Dr. Warner draws attention to another class—the nervous irritable children who are irregular in school attendance on account of frequent headaches, chorea, occasional fits, habitual truants whose brain defect can be proven; children so dull that they remain among the infants and learn nothing but to be good.

Cruel.—Teasing is an allied trait. Some of the cases are clearly the results of seeing the slaughter of animals. Perhaps some are the direct result of punishment, for there is a record of physical punishment in most cases, and in not a few of a brutal sort. Much childish cruelty is due to ignorance. A young child who pulls a fly's wings off out of curiosity may not have the very slightest notion that the fly may not like the process.

Selfish.—Are often mentioned among the cruel. Selfishness is one of the most striking traits of the only children in families.

Lying.—Nearly related to imaginativeness. It seems to be a sort of exercise for the rapidly enlarging personality.

The timid.—Timidity evidently has a physical basis. Signs of this predisposition are nervousness, weakness, and bad health generally. Very often the fear has been made use of to secure the enforcement of command, a practice as dangerous as it is savage and cruel.

Among other traits referred to are abnormal curiosity, loquacity, gluttony, peevishness, etc.

Many teachers know the child who is "not dull but somehow wrong." Such a child may be found specially troublesome, often complaining, very self-willed, very passionate, morally defective, etc. "Small classes and specially trained teachers might be provided for the dull, the excitable, the wrongly-made children, as a safety and protection to Society. . . . Should the endeavour be made to educate and save the child, or to reform the drunkard and criminal, and redeem the pauper and Society?"

THE ONLY CHILD.—An undue proportion of peculiar and exceptional children appear in this group. [There is an old saying in Lancashire that "one child makes three fools!"] The only child often resorts to imaginary companions. The devices which they employ to help them in this matter are varied and interesting, and suggest somewhat as to the strength of the social instinct.

As the result of his study of these cases Mr. Bohannon has come to the following conclusions:—

(1). Only children are unmistakably below the average in health and vitality.
(2). Nervous disorders seem to be unusually common in the families.
(3). The children appear to enter school later, and to be less regular in attendance than other children.
(4). They have less command of themselves socially than other children, and their social relations are therefore more frequently characterized by friction.
(5). Unusual precocity is common.
(6). Many of them indulge in imaginary companionship, to compensate for inadequate real companionship.
(7). Selfishness is most frequently named among the worse traits, and affection among the best traits.
(8). As a rule, the home treatment has been that of unthinking indulgence.

It is almost unanimously agreed that there should be far less indulgence; that a more uniformly firm and natural method of control should be followed; that age considerations should have more influence; that such children should not be so constantly with parents and other elderly persons, but more with children of their own age, and thus learn how to share with, and yield somewhat to, others; that the undue anxiety and concentrated love of parents should yield to a more intelligent appreciation of the wants of the child, who is in much greater need of discriminating attention than of the lavish bestowal of misguided affection.

"No other question in pedagogy manifests such a crying need for intelligent, sympathetic, patient study. Many are they who have been needlessly, almost criminally, misunderstood by those from whom they had a natural right to be properly appreciated. The easy disregard with which this right is so often overridden in the name of method, system, or discipline, suggests the influence of brutality, rather than that of science. The mental suffering and anguish which defectives of the various classes are compelled to endure as a result of the stares and low curiosity of others, is barbarous. . . . We find timidity, instability, morbidity, spitefulness, resentment, cunning, deceit, in fact about every form of malevolence resulting from a contracted personality. The individual is turned back on itself, like an ingrown nail, to disturb and imitate. This is the natural result of being 'laughed at,' 'ridiculed,' 'discriminated against,' 'scorned,' 'stared at,' 'made fun of,' 'kept at home,' 'teased,' 'worried,' 'left out of games,' etc. Moreover, on those of the opposite kind (*i.e.*, *not* peculiar except in a '*good*' sense—see above headings), the petting,

'encouragement,' showing off, indulging, etc., also produce an abnormal individual, vanity, pride, self-assertion, etc., and the many other qualities belonging to exaggerated personalities."

Siegert sketches briefly fifteen types of children, *viz.*, melancholy, angel or devil, star-gazer, scatterbrain, apathetic, misanthropic, doubter and seeker, honourable, critical, eccentric, stupid, buffoonly-*naive*, with feeble memory, studious and *blase*. These, according to Siegert, constitute some 8 per cent. of all children, and teachers and the school-system (to say nothing of parents) are often responsible for their complete wreck or ruin. Individual treatment here is the only means of change or salvation, and force is worse than nothing at all. "Do not wantonly and forcibly destroy the forms of nature, do not burst rudely and destructively in upon the problematic child-natures that are developing according to their own laws . . ." In all these matters it is important to know "whether the fault arises from defect or excess, for it is easier to abolish than to build anew."

Parents would profit by studying the nature and mental constitution of their children, and by seeking the help of the medical man in the management of them. It should be recognised that illness is not only physical, but also mental and moral. A doctor should therefore be concerned not only in the prescription of drugs for bodily ailments, he should be prepared to diagnose the nature of the character lesion, and to advise the parents with respect to the general management of peculiar and exceptional children. Peevish or passionate children, children nervous or timid, brooding or morose, jealous, spiteful, or cruel, mischievous or immoral,—were formerly treated as morally bad rather than as sick of a disease which required for its cure a physician rather than a parson. Medical men have perhaps in the past treated a disease too much at the expense of the patient, and even to treat a symptom rather than the disease. They have been content to take into account one factor to the neglect of the intertwining many; in removing one grease spot they have been deluded into believing that they have cleaned the suit! A healthy reaction is now taking place, but we shall have to examine still further into the psychology of the mind of the child, child-types, the child's personality, the claims of his ancestry, and moulding environment.

The study of childhood must proceed side by side with the study of the diseases of children, and the education of the medical man must be revised to fit him for his extended duties of parental adviser. The medical profession must cease to make concessions to an ignorant and prejudiced public by the dispensing of the ubiquitous bottle of medicine, or by the drafting of a cabalistic prescription. We must cease to worship Mammon as the time-servers of credulous patients; we must refuse to pay them homage at the sacrifice of principle and professional honesty. In return the public must not be so niggardly in their appreciation of medical men and their methods, and should apportion to merit its due reward, and to honesty of purpose its modicum of recommendation. Neither should parents sacrifice their children to their own personal vanity or family pride, nor fail to cultivate the knowledge, insight, judgment, and tact due to their office.

BAD HABITS OF CHILDREN.

The most common bad habits of young children are sucking, nail-biting, dirt-eating, bed-wetting, and masturbation *(Holt)*. The habit of **sucking** fingers or dummies, if persisted in, may produce a misshapen mouth or irregular teeth. It constantly stimulates a flow of saliva and thus may lead to indigestion. It needlessly introduces into the mouth a source of infection which may convey to the child the germs of thrush or other preventable disease.

Nail-biting and dirt-eating are seen especially in children over 3 years old who are very nervous, or whose general health is below par. "Dirt-eating is a morbid craving which is rarely seen in a healthy child." Such tendencies to irregular brain action of nervous children should be carefully watched and controlled.

Usually at two and a half years, a child, if it be taken up late in the evening, may be expected to go during the night without wetting the bed. Some children acquire control of the bladder at night when two years old, and a few not until three years. After three years, habitual **bed-wetting** shows abnormal lack of control. This inability to hold the water may be due to a great variety of causes. In the majority of cases the incontinence of urine is due to imperfect development of the controlling parts at the neck of the bladder, and a bad habit in addition. It often happens that the formation or continuance of the habit is due to the child being in poor general condition; to some irritation in the bladder, *e.g.*, acid urine, stone; bowel, *e.g.*, thread-worms, constipation; or in the genital organs, *e.g.*, inflammation in girls, a tight foreskin in boys. Not infrequently the trouble is caused by the child too freely indulging in water and milk late in the afternoon and during the night. The relief of the inveterate bed-wetter of five or six years of age is often most difficult. The co-operation of mother and doctor is necessary in the treatment of a child addicted to bed-wetting. The doctor will seek to discover the cause and to treat it; the mother will have to attend to the diet and general hygiene of the child. No fluids should be given after 5 p.m., the supper being always of solid or semi-solid food. The child's bedclothing should be light, and he should be made to sleep on his side by tying round him something with a large knot between the shoulders. The child should be taken up to urinate when the parents go to bed. In the moral correction of this habit, rewards are more efficacious than punishment in older children.

Masturbation may reveal itself in certain "queer tricks," such as rocking of the child backward and forward with its thighs tightly crossed, rubbing the thighs together, etc. It may be seen at any age, even in those not over a year old, and in both sexes. Medical advice should be sought to discover a cause of irritation, and the mother should be watchful in noting any rubbing of the genital organs with the hands, or the parts against some sharp object, to prevent and correct this injurious practice. It may be necessary to fasten the hands to prevent them coming into contact with the genitals, and in case of young girl babies to prevent leg-rubbing by applying one or two thick napkins. A mother should be careful in the choice of her nurse.

The operation of circumcision in boys is preventive of much evil.

THE FORMATION OF GOOD HABITS.

"Sow an act, reap a habit; sow a habit, reap a character; sow a character, reap a destiny."

It has been truthfully said that in the first period of the life of the young there is far too little physiological training, and at a later period far too much unphysiological instruction. Every child is born with a number of instinctive tendencies or dispositions which are derived from its parents. At first these are latent; their expression later coincides with the child's mental and physical development.

Children are creatures of habit; they should therefore be brought up so as to form good habits. If properly trained from birth, fed regularly, put to sleep regularly, bathed and aired regularly, and taught to perform its little functions at stated times every day,—the baby will soon develop into a "little machine" working with clock-like precision. Such a child causes less trouble, and thrives far better, than one which is fed and re-fed, handled and dandled; or one which requires to be continually entertained when awake, and only falls asleep when it has exhausted itself and its nurse. Habits which are so necessary for the infant's comfort and well-being, have, however, to be fostered under the influence of the nurse and parents if they are to be formed aright.

Habit is of practical value. When actions become habitual they can be carried out with greater promptness and accuracy, and with less fatigue. Habitual actions are performed almost automatically, with a minimum of conscious attention and labour. Hence habit largely determines the direction of our activities. and it becomes important to train children properly at an early age so that first-formed habits may pilot them in right directions. For habit is "second nature."

With regard to older children it must not be forgotten that habits are formed and deep impressions made very early in life; school impressions in particular are often of lifelong endurance; children, in order to develop cleanly and decent habits, must, therefore, be trained to cultivate such habits during school life. Children are imitative as monkeys; the teacher should, therefore, be an example of personal cleanliness and neatness, as well as a model of intellectual and moral worthiness. For just as the children imitate the teacher's voice, manner, and mannerisms, so the personal habits of the teachers are reflected in the children. It cannot be doubted that school instruction given to children concerning the care of the teeth, cleanliness of the skin, etc., the avoidance of bad habits like drinking, smoking, spitting, etc., the supervision of the offices by the teachers or by monitors, and the insistence of proper use of and behaviour in them,—all would have a powerful effect for good on the child, as well as an educational and beneficial influence on the parents which would be certain to result in improved conditions of the home life of the poorer classes. "It is in this manner that orderly habits, ideas with regard to ventilation, quiet movements, and innumerable other things can be, and are, included in the results of school life." (*Ritchie.*)

"It has been said that 'nature is stronger than nurture', and strong hereditary tendencies often appear to defy the most persistent care and training; but who can doubt that education in the broadest sense, and the influences of refined caretakers, powerfully stimulate the healthy influences and efficiently hold in check the evil ones"? *(Ashby).*

THE CHILD IS FATHER OF THE MAN.

You want your child to be healthy, happy, and good, and would like to feel sure you know what you can do to help him be all three.

Be what you would like your Child to be.

He will imitate what you actually do much more certainly than he will believe what you tell him. If he sees you eat and drink just what you like to eat and drink, and not what is good and wholesome, he will imitate that. If you scold and strike, he will do the same. If you always keep your temper and are gentle, and patient and firm, he will most likely learn to be good tempered and obedient.

Begin at the Beginning.

When your baby is born and you begin to nurse him, what you are, and do, and eat, are making him healthy and happy, or unhealthy and unhappy.

If you are in a passion before giving him a drink, your milk will be bad, and make him cross, and give him pain. If you drink beer and whisky it is passing into him, and you are getting him ready to want beer and whisky when he is old enough to take them.

Self-denial.

One of the most needful things for us all to learn is to deny ourselves lower things for the sake of something higher; *to do without.* Let Baby do without a dummy teat; next help your little boy to deny himself sweets and to use his pennies for something better.

Be good yourself.

You see I am coming to another point; how to help Baby to be good. Here I must say again, you must be good yourself. Never say an untrue word to your child, never promise him anything and then not fulfil your promise.

Truth begets Trust.

You want your child to be a trustworthy man, a true and faithful man. If you do you must help him to be faithful from the beginning. Little children often tell lies, because they are frightened. They are often timid, and grown-up people hardly realise how quickly they learn to hide away what they think will displease the grown-ups.

Put the best things first.

Let your child hear gentle words from the beginning. Let him see that the things you hate are the really bad things—lies, selfishness, cruelty, angry unloving ways.

Teach him to obey you.

Let him learn above all things to *obey you.* Ask only what is good and see that he does it every time while he is quite a wee mite.

The above are extracts from useful pamphlets kindly forwarded to the writer by the Secretary of the Social and Sanitary Society of Edinburgh.

The Parents' National Educational Union* deals with the development of child-nature on the underlying principle that character is everything. It cannot be doubted that the **mental** and **moral health** of the child is of supreme importance.

*Address: The Secretary, 26, Victoria Street, London, S.W.

PARENTAL COMMANDMENTS.*

Don't be guilty of the worst of all cruelties—sowing the seeds of physical, mental, and moral misery in the lives of your children during those years when they are the helpless subjects of your care, or your innocent victims.

Don't labour under the impression that education is completed when school-days are over; it has often not even commenced. The real training rests with you and with themselves, and the influences and circumstances under which they are placed.

Don't lose sight of the fact that the mind and body are so connected and combined, that a disturbance in the one cannot fail to be reciprocated by the other . . remember that to read what is really wholesome, and to digest it, is as essential to mental health as to eat what is wholesome and digestible is essential to bodily health.

Don't forget that the muscles and sinews which they are hourly developing, day by day, form the machinery which is to carry them to manhood and through life, and that they will require robustness of body as well as energy of mind.

Don't treat your girls as if they never were to become women.

Don't fail to instil early into the minds of your little girls an interest in small household duties; the most womanly of womanly accomplishments consists in the ordering, managing, and sustaining of a home, as it should ever be found, clean, comfortable, peaceful, and home-like.

Don't forget that the brain is regulated by the self-same laws as all other parts of the body.

Don't forget the indissoluble life-partnership existing between you, nor ignore the fact that their very weakness and imperfections are inherited from yourself.

Don't lose sight of the most important period in your children's lives—from the age of eight to eighteen. If this time is abused and neglected, their whole lives will be thrown irrecoverably back; but if improved and made the best of, your children will receive a lasting, life-long legacy. Be their lighthouse and danger signal at those particular periods and places where caution and special care are urgently demanded.

Don't permit the use of intoxicating liquors or *tobacco in any shape or form.*

Don't forget that we in this life live under the reign of law,—that pain and misery are the effects of violated laws, and happiness the necessary result of obedience thereto,—that infringement of the physical, organic, moral, and intellectual laws have their certain attendant penalties, and that the violation of the great law of justice established by the Creator for man's guidance in this life is the real cause of the widespread misery which pervades society in every nation under Heaven.

Don't forget that whilst a child born sickly and delicate may, under judicious management, become healthy and strong, one born strong and healthy may, under bad management, soon pine, wither, and die.

*Extracted by permission from "The Parental Don't" published by Walter Scott Ltd., London, price sixpence.

ALCOHOLISM; CHILDREN; PHYSICAL DETERIORATION.

The Report of the Committee, presented to Parliament by command of His Majesty states that—

The abuse of alcoholic stimulants is a most potent and **deadly agent** of physical deterioration.

Alcoholic persons are specially liable to tuberculosis and all inflammatory disorders.

Evidence was placed before the Committee showing that in abstinence is to be sought the source of muscular vigour and activity.

The **lunacy** figures show a large and increasing number of admissions of both sexes which are due to drink.

The following facts recognised by the medical profession are published in order to carry out the recommendation of the Committee and to bring home to men and women the fatal effects of alcohol on physical efficiency:

(*a*) Alcoholism is a chronic **poisoning**, resulting from the habitual abuse of alcohol (whether as spirits, wine, or beer), which may never go as far as drunkenness.

(*b*) It is a mistake to say that stimulants are necessary for those doing hard work; this can usually be done better without alcohol. It is a fact commonly known that all persons training for football or other athletics avoid alcohol like poison.

(*c*) Alcohol is really a narcotic, dulling the nerves like laudanum or opium. Its first effect is to weaken a man's self control while his passions are excited: hence the number of **crimes** which occur under its influence.

(*d*) For persons in ordinary health the practice of drinking even the milder alcoholic drinks apart from meals is most injurious. Alcohol is **not** in any sense a food, neither does it nourish the body in any way. Beer, wine, or spirits should never be given to infants or children.

(*e*) The habit of drinking to excess leads to the **ruin** of families, the neglect of social duties, disgust for work, misery, theft, and crime. It leads also to the hospital, for alcohol produces the most varied and the most fatal diseases, including paralysis, insanity, diseases of the stomach and liver, and dropsy. It also paves the way to consumption, and frequenters of public-houses furnish a large proportion of the victims of this disease. It complicates and aggravates all acute diseases; typhoid fever, pneumonia and erysipelas are much more fatal in the subject of alcoholism.

(*f*) The sins of the parents who have drunk to excess are visited on the **children**. Parents who habitually take strong drink often have sickly and ailing children, subject to wasting and weakness, epilepsy and other diseases. Thousands of children are neglected and cruelly treated each year by parents reduced to poverty through money wasted on drink, and made brutal by the evil effect of alcohol on the brain. In fact, many a drunkard's child would be without food or clothes were it not for the action of charitable people.

(*g*) In short, **alcoholism** is the most **terrible enemy** to personal health, to family happiness, and to national prosperity.

PERSONAL HYGIENE: CLEANLINESS OF THE CHILD.

It has been well said that dirt is matter in the wrong place. Dirt and disease germs are common associates that call for removal from our person, and elimination from our environment. Not only cleanliness of the skin, the nails, the teeth, and the clothing is necessary, but also cleanliness in our habits, in our homes and surroundings, in the food we take, and the air we breathe.

Dirt and **neglect** constitute two of the primary **evils** of child life. Much of the disease and injury to health is the result of personal uncleanliness. Inflamed eyelids, "ulcers on the sight," consequent defects of vision, and other conditions are often the direct results of dirtiness, while wounds and sores, chilblains and discharging ears are aggravated by such conditions. One ophthalmic surgeon on the Continent is so impressed with the close relationship existing between dirt and diseases of the eye, that in connection with the out-patient department of his hospital he provides baths for the regular cleansing of his eye patients! School baths would help in the same way.

If the **skin** is left unwashed, a cake of dirt, composed of sweat, oily matter, dead skin scales, particles of the clothing, and the dust of the air forms on the skin and covers it like an adhesive plaster. It thus happens that the skin cannot do its share in getting rid of the waste matters of the body; that the blood is kept impure through imperfect excretion of animal poisons; that skin diseases result from chemical irritation and from the growth of germs which find a good soil in the cake; that the body and clothing become infected with vermin; that decomposition of the cake takes place, and the atmosphere of the person is constantly malodorous and poisonous. The test of cleanliness in the children in our elementary schools is the conditions of their heads. As already stated, lice on the head give rise to disease of the scalp, skin, eyes, and to enlarged glands in the neck, beside indicating a low standard of personal hygiene. Nits in the hair, with their common associates of filth, infection, and neglect, *viz.*, scabby sores in the head (impetigo) and contagious skin diseases (ringworm, impetigo, itch) give rise to a great deal of trouble in school.

The condition of the hair and scalp of the girls in the elementary schools is generally much worse than boys. Verminous heads are comparatively rare among the shorter haired boys. As in France and other countries it should be compulsory in England that the hair of all such school children be cropped short, and that personal cleanliness be rigidly enforced. For not only should bodily cleanliness of the children be regarded as the essential commencement of all school hygiene, but it is incumbent upon authorities to prevent, as far as possible, the contamination of clean healthy children who are forced to attend their schools. **Instruction** should be given to parents and others on parasites of the head and body, and the clothes parasite; the means of prevention by short hair, soap and water, small tooth comb; the importance of complete eradication of nits; the necessity of persistence in treatment; the danger of re-infection from clothes, hats, and hair brushes; the relation of dirt to ophthalmia, tuberculosis, etc.; and on cleanliness and care being the only ways of preventing most of the contagious diseases of school life.

CLOTHING OF THE CHILD.

Clothing material should be—(1) BAD CONDUCTOR OF HEAT, *e.g.*, wool, else our body heat would pass too readily to the outside, and expose us to risk of chill from sudden changes of temperature. (2) GOOD ABSORBER ; wool absorbs much moisture without interfering with evaporation of perspiration. Cotton and linen worn next the skin become wetted by the sweat, which tends to evaporate, and so chill the body. Cotton, however, has certain material advantages—it is cheap, very durable, and easily washed. (3) POROUS ; clothing must allow escape of perspiration. This is why the wearing of water-proof clothing is objectionable. (4) LIGHT ; light clothes of a non-conducting material, *e.g.*, eider-down quilt, are warmer than heavy clothes made of material which conducts heat well. (5) LOOSE ; air is a bad conductor of heat, and those articles are warmer which have much air in their meshes. Tight clothes are also less warm because they interfere with circulation, *e.g.*, tight gloves and boots, they are, moreover, deforming, crippling, and less comfortable. (6) NON-INFLAMMABLE ; note the danger of flannelette and celluloid.

The **weight** of the clothing should be properly **distributed.** It should be mainly borne by the shoulders, partly by the hips, and not by the waist only. There are certain ill effects produced by suspending all clothes by shoulder-straps. The clothes should be **well-shaped.** Rounded backs, crooked spines, and flattened chests may be produced by wearing ill-shaped clothes. Narrow-chested garments, jackets that top-button tightly, arm-holes that are badly shaped, all prevent the child throwing its shoulders back and its chest forward.

The ill effects of wearing tight corsets are well known. Chest expansion may be impaired ; abdominal organs may be injuriously displaced ; interference with the healthy working of constricted parts may produce various disorders. Constriction by garter may cause obstruction of blood through the veins and varicose veins of leg. Tight fitting hats may interfere with the blood supply of the scalp by arterial compression, and thus starve the hair and induce baldness.

Attention to the fitting of boots and shoes in childhood will save a lot of trouble in after life. Ill-fitting, tight or pointed boots and shoes and high heels are responsible for much physical suffering. Not only are cold feet and chilblains, corns, bunions, and ingrowing toe nails produced by misshapen foot-wear, but permanent and painful deformities of the foot and other parts may have their origin in the same manner. Leaky boots often chill the feet and excite illness.

Underclothing of flannel or other woollen material should be worn by all children. In case of "flannel rash," a thin soft vest of linen or silk should be worn next the skin and the flannel put on over this. Dirt in cloth and flannel, although it does not show as it does in linen and cotton, is equally harmful. It is important, therefore, to change woollen underclothing frequently, for dirt breeds vermin and disease. No article of clothing worn during the day should be used during the night. Children can be overclothed, and their skins kept sodden, sensitive and delicate. Coddled children easily catch cold and contract disease. Clothes must be distributed over the body wisely, and not too well, or scantily, in parts. Hardening involves risk.

THE CARE OF THE CHILD'S TEETH.

Note that the teeth are formed very early in life, and that an infant requires to be well fed from birth in order to get a good set. Breast-fed children have the best teeth, those fed on cow's milk rank next, but when babies are fed on starchy food, skimmed milk, or patent food, the teeth, both temporary and permanent, are ill developed and prone to decay. *The teeth suffer with the bones and general health of the child.* All the temporary (milk) teeth, twenty in number, should be cut at two years of age. These have to do the chewing until the permanent teeth (32) begin to appear at six years. A mother **must** care for the milk teeth of her child if strong permanent teeth are to be expected. Every child ought to be provided with a tooth brush, and it is the duty of the mother to see that the child uses it every night and morning. In the case of young children, the mother should herself gently brush its teeth with a small soft brush, using some agreeable antiseptic tooth paste like euthymol, (P. D. & Co.) or tooth soap. A powder should only be used once or twice a week in order to assist the removal of tartar. The teeth should be brushed all over, and special care should be taken to brush well the tops of the back teeth. In cleaning the teeth an up and down movement of the brush is better than one from side to side. In this way the food is removed from the spaces between the teeth where it commonly lodges and putrefies. A deposit of tartar should be at once removed from ALL teeth, as it loosens them, and may result in their loss.

It is most important to clean the teeth at night before going to bed, as it is during the night that any residue of food has time to ferment, and so make the acid which attacks the enamel. The outside of a tooth is composed of a hard, ivory-like substance called *enamel.* Beneath the enamel, and forming the body of the tooth, is the bone-like *dentine.* Inside each tooth is a little room containing the blood vessels and nerves—the *pulp chamber.* When the enamel and dentine are damaged, as in decay, the nerves of the tooth become inflamed and very painful. This is toothache. Sugar and sweets are bad for the teeth. Why? Sugar is changed into acid in the mouth. If the mouth is neglected, and this acid allowed to remain, it eats away the enamel or "armour plate" of the tooth, dissolves out the lime from the dentine, and then allows the germs (always present in the mouth) to enter and eat the tooth, and decay it. Another reason—an excess of sugar excites indigestion and causes ill-health, and, therefore, an unhealthy state of the mouth, as is evidenced by the furred tongue, nasty taste, and sour breath. Such a dirty mouth makes a splendid breeding place for germs.

The teeth should be regularly inspected by *a qualified* dentist, so that a decayed tooth can be filled in time, or irregular teeth corrected without delay. NEVER ALLOW ANYONE BUT A QUALIFIED DENTIST TO EXTRACT A CHILD'S TOOTH. A "stopped" tooth is better than an artificial one. A filling in time saves many extractions. NOTE—the worse the decay, the more difficult, expensive, and painful it is to stop and save the tooth.

The large double teeth which a child cuts at the age of six years are *permanent* and require special care—because they are permanent grinders, and prone to decay. Decayed teeth cause ill-health and enlarged glands.

N.B.—Good teeth—good mastication—good digestion—good health.

PHYSICAL EDUCATION; EXERCISES AND DEVELOPMENT.

Physical education is concerned with all the conditions upon which the physical well-being of the body depends, such as exercise, rest, recreation, food, clothing, personal cleanliness, and the like. "It should be remembered that the education of the mind is, and should be, a 'life-long' process—there is no need of hurry—but that the development of the body is strictly limited to a certain period of existence, and becomes finally and irrevocably arrested at a given date."

Exercise is necessary at all periods of life, but especially so during childhood and early manhood or womanhood. Recognising the importance of this to the children, practically all schools have now adopted physical exercises as part of their curriculum. It is the duty of all parents to see that their children enter into the school games, and spend a great deal of time in the open air. The judicious combination of exercise, rest, and sleep plays a very important part in the health of the individual.

Mental, moral, and physical education are related and interdependent, and one cannot be separated from the other without definite loss of beauty and strength in the character and physique of the child and adult. Montaigne well says in speaking of a man as he should be, "I would have the disposition of his limbs formed at the same time as his mind. 'Tis not a soul, 'tis not a body we are training, but a man, and we must not divide him."

It is becoming clearer as competition becomes more strenuous, that the weak must go to the wall, and that the prizes of life go to the strong who have "staying" power. In business and professional life evidence is ever presented that no skill, no learning, no intellectual greatness, can carry with it its fullest influence without a proportionate capacity of physical endurance. One important side of physical education is the employment of muscular exercises for promoting the physical development and structural efficiency of the individual, and in correcting any asymmetrical or abnormal growth as seen in lateral curvature of the spine. "Exercise means growth, functional vigour, and the maintenance of a high standard of organic life. Undue rest implies decay, feebleness, and a debased standard of functional value." (*Treves*).

Physical exercises* can be classed under 3 heads:—

1. **Hygienic.**—Remedial in object, and as a means of treating diseases or disorders of various kinds. In this way chest expansion is secured, lateral curvature of the spine is corrected, flat foot is prevented or cured, weak ankles are strengthened, and a symmetrical growth of the body is acquired.

2. **Educational.**—Selected for developing the child's physical and mental faculties, and used in co-operation with mental and moral training. In this way not only is physical development favoured, but habits of order and discipline are ingrained, and certain qualities of "form" or "style" are acquired. One headmaster writes: "The worst boys intellectually, physically, and morally are the loafers."

3. **Recreative.**—Designed for amusement, interest, and occupation, and as a relief from brain work or other necessary labour. Such exercises, *viz.*, cycling, swimming, etc., are called *recreative* because they re-create or restore the mind and body, and enable the ordinary work to be done with greater pleasure and efficiency.

*Consult the "Admiralty Handbook," or Miss Roberts' "Handbook of Free Standing Exercises."

Children are sent to school for the purpose of training them for the battle of life. Success depends in a large measure on the full and harmonious development of the different parts of the body. An intellect should not be developed at the expense of physical structure. No giant in thought is better for being a pigmy in physique; a sound mind is always improved by being housed in a sound body.

Life is "*organisation in action*"; Exercise is action which involves control and co-ordination; co-ordination to hearing as from command—to sight as in playing a ball at cricket or tennis. Gymnastics properly practised require deliberate control and muscular organisation. The correct performance of a movement is therefore more important than absolute unity of time and a pure mechanical accuracy.

For the successful performance of physical exercises there are three essentials:—

1. Medical examination of the child should precede and accompany its subjection to physical exercises. Unless this is done, the very children who are most in need of physical education may receive grievous injury by unwise and unregulated exercise.

It should not be forgotten that the school exercises ordinarily prescribed are those considered suitable for a *normal* child of a given age. Every class has its *weaklings*, *e.g.*, its anæmic and underfed children; those suffering from heart or lung affections or recovering from recent illness; children who are constitutionally delicate and prone to stumble; those whose muscular strength is small, but whose nervous system is highly developed; those with vaulting ambition to excel, but with constitutions hedged round with physical limitations!

Children should never be exercised to anything like the limit of their capacity, which, it should be noted, is *very different from that of their teacher*, for physical exercises are exhausting to brain as well as muscle, and may lead to injurious strain of bodily organs. Experience has proved, and modern methods have demonstrated, that if over-exertion is carried to the point of producing obvious palpitation and shortness of breath, it might bring about acute dilatation of the heart of immediate danger, and of future distress and disability. Such disastrous results as heart disorders from over-strain are most likely to happen when violent exercises are taken when the subject is not medically "fit," or is not in proper physical training. *Never allow a child to lose his breath.* The Alpine guide adopts this principle when he walks a tyro! Long runs have indirectly accounted for the physical ruin of many boys.

2. A properly trained teacher is necessary, for if the child's requirements are not understood, or a bad attitude is not corrected, unexpected and mischievous results are certain to occur. Moreover, if untrained as many teachers in school are, the children are kept in strained positions, etc., whilst individual errors are undergoing correction.

It is obvious that no hard and fast tables of exercises can be drawn up which are capable of universal and beneficial adoption; physical exercises must vary with, and suit the needs of, an *individual* or grouped class, not of a preconceived and rigid syllabus.

It should therefore be recognised that physical education demands as much deliberate study, care, and method as mental training, and

that it confers qualities which are *at least* as valuable as the mental gymnastics of the ordinary course of education.

3. Children must be PROPERLY DRESSED for the class. If a jersey is not worn, or a costume is donned which conceals the figure, the real position of the child may be missed. A tight dress may also cause the exercises to accentuate, and not diminish, the defect they are intended to correct, *e.g.*, arms extended upwards stretch the dorsal (upper back) spinal curve, and should lead to its reduction without accentuating the lumbar (small of back) curve. If, however, through a tight sleeve or waistband, etc., the arms cannot be fully extended, the child may reach positions correct to the untrained eye by bending the lumbar spine, and leaving the neck and head poked forwards on an unchanged dorsal curve. Thus error is added to error and one evil to another. This is one example of many which could be cited !

It is obvious, therefore, that a jersey and knickerbockers should be worn by boys, and a blouse (preferably jersey), short tunic, and knickerbockers be worn by the girls. This costume is enforced in all schools in Denmark and Sweden, and adopted in most German schools.

Again, if improper shoes are worn the child cannot freely march, jump, balance, etc.; a child should therefore be provided with soft canvas shoes when performing physical exercises.

To guard against chills after vigorous exercises in a gymnasium or in the open, *e.g.*, football, a sweater should be worn, and a hot bath and rub down should be taken as soon as possible and the clothing changed.

How often, and for how long, should physical exercises be taken? In Sweden and Denmark children have ½-hour exercises either every school day, or at least 4 days a week, and one afternoon compulsory games (most useful). To get satisfactory remedial effects from school gymnastics, exercises of 20 minutes duration, 6 days a week, will probably be required. Less seems too short to be effective, more tires some children.

"*I have found, and I am dealing solely with children who would have a certificate of exemption from drill (and actually from school, of course, as they are patients in hospital) that this extent of suitable drill neither tires the children nor causes injurious after-effects. There is scarcely a child not acutely ill who is not actually benefited by this amount. But, be it noted, if the child is abnormal the teacher requires special experience. In ordinary children these exercises are quite safe, but the teacher should be trained to observe signs of stress through the child being unduly pressed.*"

[This is the experience of Dr. Frank C. Shrubsall, who has conducted important investigations at the Hospital for Consumption and Diseases of the Chest, Brompton, London.]

In these days when so much is written and said about Physical Training, and so many "systems" compete against each other for supremacy, it is impossible to write a short article which can embrace the subject thoroughly and yet briefly.

The systems of physical exercises devised are innumerable; in practice ordinary teaching has three forms in this country :—

(1.) SWEDISH :—

(*a*) With apparatus—as taught in Sweden and Denmark.

(*b*) Without apparatus—as adopted in our elementary schools, *not* in Sweden and Denmark.

(2.) GERMAN :—Their club gymnastics consist of free-standing mass exercises, and then apparatus work, *e.g.*, parallel bars, etc. The course is not systematic, and one set of movements is sometimes overdone. In England there is a tendency to call German any exercise not Swedish, and in which some movements are done to music. Musical accompaniments to physical drill are *unknown* in German schools; this drill is based on club gymnastics.

(3.) MUSICAL DRILL :—Introduced into England from America in 1860. This may be free-standing, or use of various forms of apparatus in hands, *e.g.*, clubs, dumb-bells, or wands, without any definite order or system.

Swedish gymnastics *alone* are systematised. They have their disadvantages, but on account of their order, *e.g.*, arch, heave, balance, and the exercise they afford all parts of the body, *e.g.*, lateral trunk, shoulder-blades, chest (breathing), abdomen, limbs (jumping, running), it seems that they must be adopted in England as the rational basis of all physical exercises. The other systems have advantages, but as educational and remedial agents they are distinctly inferior. But whatever system of physical exercise is adopted, it should be clearly understood that a poor system with a *good* teacher is better than the best system with a *bad* teacher, and that out-door *games* are also *essential* for the bodily health of children.

The chief point in Physical Education is to develop the body evenly, and not one part at the expense of another. Man is built bi-laterally and symmetrically, and it is by the simultaneous contraction of the antagonistic muscles that the equilibrium of the body is maintained.

Unfortunately these muscles in most cases are not evenly developed, the flexor muscles all over the body being stronger than the extensors. This is observed from birth; a baby's little grasp is surprisingly strong, and all the ordinary daily habits of life, reading, writing, walking, eating, and even sleeping tend to further strengthen the flexor muscles of the body. These being in front draw the body forward, round the shoulders, narrow and flatten the chest, draw forward the head, and generally give the bad bodily position and carriage we know so well.

Exercises should therefore be directed to develop the extensor muscles, particularly those of the trunk. It is safe to leave the flexors to take care of themselves. The extensor muscles of the trunk are all behind, and are those which erect the body and maintain it in this position, which hold in the hollow of the back, and hold back the shoulders and head.

In the case of the girl who is over-grown, under-fed, tired and listless, the trunk tends to be held in the flexed position where least muscular effort is necessary. The extensor muscles allow this bending to take place because they are relatively weaker, and too long to be able to contract quickly and easily. When they contract, to draw the shoulders back and erect the spine, they have first to gather up the "slack" as it were, before they can commence to pull on the body. This explains

why it is such an effort to most people to hold their bodies in the erect position so necessary to health and good carriage. Muscles which are frequently used, like the flexors, become short and strong, and the over-stretched and enfeebled extensors have (in addition to performing their own work) to overcome the resistance of these over-developed muscles. Moreover, an over-stretched muscle acts at a mechanical disadvantage proportionate to its unnatural length.

In brief, Physical Exercises should be mainly directed to strengthening and shortening the muscles of the back, and stretching those which contract the chest and draw it and the shoulders downwards.

The following exercises will have the former effect :—

(1.) Lying in the prone position, *i.e.*, face downwards, on the floor, or over the end of a couch, while another person holds the feet down, raise the trunk and head as high as possible, and maintain the position for a few seconds. The easiest way is to stretch the arms backwards towards the feet while lifting the chest, but later, as the muscles strengthen, the arms should be extended sideways, and then upwards, to make the exercises more difficult.

(2.) Standing in good position, bend the body slowly forwards, keeping the head high, and making the bending only at the hip joint. Stay in this position a few seconds and then erect the trunk again.

Arm bendings and stretchings and head turnings done while in this position increase the strength and value of the exercise, and also bring into play the shoulder and neck muscles.

Then to stretch the flexor muscles which are making a resistance to these extensors the following exercise is an example :—

(1.) Standing, fingers touching the point of shoulder, bend the trunk backwards, taking care that the head starts first, and the bending takes place in the upper part of the spine, as well as the lower. This exercise, at first, sometimes causes a little stiffness, or "lameness," in the region of the stomach as this part is stretched and expanded.

To develop the extensor muscles that are attached to the spine and shoulder blades, and which draw the shoulders backwards and expand the chest, the following exercises are good :—

(1.) Extend the arms forwards and then strongly pull them backwards, bending the elbows, keeping them well outwards. A resistance to this bending (an elastic cord, or the resistance of another person) will make the exercise stronger. It should be done in three different ways :—*(a)* With deliberate effort shortening the muscles of the shoulders. *(b)* With great force and speed, so that the muscles across the front of the chest are stretched. *(c)* Gently and slowly, at the same time drawing a deep breath in through the nose.

(2.) Extend the arms above the head and then draw them downwards and backwards as if a bar is being lowered behind the neck. Take great care that the head is not moved during these exercises. The tendency will be to poke it forward, and when this is corrected and resisted, the extensor muscles of the neck will be strengthened.

Exercises which are called Balance movements call into play the simultaneous contraction and co-ordination of all the muscles of the body. They must necessarily be done in a good position, and in order to keep this, the weaker muscles are forced into action. They, therefore, should form a large part in the physical education of children. Also as these movements very largely effect the development of the lower limbs and muscles of the abdomen, they may be regarded as strengtheners of these parts and of the ankles and feet. Examples are :

(1.) Heels raise and sink.

(2.) Standing on one leg, raise the other forwards, backwards or sideways, without bending the body.

(3.) Bend both knees outwards, sinking slowly into a squatting position, and in this position turn the head slowly to the right, and to the left side. In all these exercises, arm movements, flinging the arms apart, or circling them forwards, outwards, downwards, will increase the value of the Balance exercise, and will at the same time expand the chest, develop the flexibility of the shoulder joint, and strengthen the muscles of the arm.

LATERAL CURVATURE OF SPINE.

Lateral curvature of the spine is a common affection amongst girls, particularly those who have grown quickly and are physically weak.

The chief cause is BAD POSTURE, the result of careless habits or one-sided work, aggravated by general debility. The sturdy little girl who romps with her brothers and throws her body into all possible positions is not the one who develops this disorder. The weak and slack muscles of the nervous, long-backed child who is too tired to play and too weary to hold herself erect, allow the spine to subside sideways or backwards into the easiest position of lateral curvature or round shoulders!

When a girl sits at her desk, or practises the violin or piano, it is the faulty *position* she adopts in the act to obtain muscular relief and change which is the real cause of the resulting deformity. For the spinal muscles on the side of the concavity shorten, and therefore get relatively stronger than the stretched and weakened muscles on the side of the convexity of the curve.

Standing on one leg is another bad posture which is the cause of many curvatures. When, be it noted, one leg is a little shorter than the other from any cause (whether in the hip or leg itself, or simply from a dropped instep), it necessitates a crooked or tilted position of the pelvis, and therefore of the true base of the spine, which curves in the lumbar region towards the side of the smaller leg. Very often the one hip is large, because standing on one leg, *i.e.*, undue weight of the body on one leg, develops unequally the muscles which support it.

When a child carries a heavy baby or a bucket of water, its whole trunk leans towards the opposite side in order to maintain the equilibrium. The practice of carrying a load of books in a satchel propped upon one hip operates injuriously in the same way. For the weight tends to pull down the shoulder, to curve the spine as before, and to tilt the pelvis (hips) in an act of compensation necessary to maintain the body erect; and the act of propping aggravates the curve.

In this one-sided work, one arm, generally the right, is used more often than the other. This right-handed work produces a curvature to the right in the dorsal spine (upper back). This, however, is not caused (as is often thought) by the muscles on the right side becoming so strong by exercise that they draw the spine over to their own side. The curve is produced to the right because the erector muscles of the spine (spinalis dorsi and colli) on the *left side* contract to prevent the body losing its equilibrium, and falling to the side that is holding the weight or performing the action. These muscles are attached to the spinous processes in slips, and act like the strings of a bow, curving the supple column away from themselves and to the right side. This explains why the spine rotates when it curves, and why the spinous processes go to

the concavity, for they are pulled over by the muscles which are attached to them, and which produce the bending. If the spine were pulled to the right by the development of the muscles of the shoulder girdle (trapezius and rhomboids) of the right side, the spinous processes to which they are attached could not have rotated in the opposite direction.

The ribs on the right side are arched backward and the shoulder-blade is prominent in consequence; it is also raised as the ribs are further apart because of the flexion. This gives an appearance of strength to the right side, and it is often spoken of as the "strong side," when in reality it is weak, the muscles being stretched unduly and having little power. The whole deformity is primarily due to "position": the crooked posture the body is thrown into in order to rest or to *do* the right-handed work is the cause of the deformity, not the actual right-handed work itself,—except in so much that it causes a one-sided, over-development of spinal muscles necessary to maintain the position.

"In the course of the investigation into tuberculosis, Dr. Annie Gowdey noticed the condition of the backs in 410 young girls at Addison-gardens school. These were children of ages varying from 6—16. 262 (64 per cent.) showed some abnormality. Fifty-eight were cases with round backs, and 204 (50 per cent.) had the scapulæ "growing out," with or without some lateral curvature. There are evidently causes during school life, which should be remediable, and which bring about this condition. The matter must be further enquired into, although there are difficulties in the way. Meanwhile the attention of the teachers, who take drill especially, might be directed to the causes which have been assigned for this condition, such as school-room lighting, desks, ways of sitting cross-legged, of standing with the weight always on the one leg, defective eyesight, nail-biting, the custom of always carrying books in satchels on the same side, and to the importance of broad-soled, low-heeled shoes. The enormous prevalence of deformity of the back among girls as compared with boys, however, points to some specific cause, and probably there is a want of regular development of the trunk muscles, induced by various constrictions and supports in the way of binders and corsets, which may be one of the causes. The carrying of infants by young girls may possibly be a contributing cause."

(*L.C.C. Report of the Medical Officer* [*Education*] *March, 1907.*)

In principle the treatment of lateral curvature consists *(a)* In educating the patient to know when she stands straight, and voluntarily to correct her faulty attitude; and *(b)* In strengthening the muscles of her back and chest by appropriate (special remedial) exercises designed to keep her spine in the normal position, and to develop the chest and improve the physique. It is also necessary to remove any cause which operates to maintain the curvature, and to correct any errors of dress which favour bad posture, *e.g.*, straps which drag upon the shoulders, and displace forwards the shoulder girdles, should be placed more to the inner or rigid part of the shoulder at the base of the neck.

With regard to **Position.** Teachers should note that standing, or sitting still, for prolonged periods is very fatiguing to young children. Sitting with arms folded or behind the back is, after a few minutes, uncomfortable, and then tiring, and is quite unnecessary.

If a child's attention is fixed, and it is at the same time required to

assume a given attitude, it tends in a very short time to lapse from that attitude, and an effort is required to remain in the same position, *e.g.*, bolt upright and with arms crossed. The consequence is that the attention is divided between the child's position and its lesson.

Ordered ease is what should be aimed at, after the lesson has once begun, but it is well to commence with some uniform position. (*Kerr Lithie*).

Parents should note that a faulty position for writing or drawing is a fruitful cause of:—Round shoulders, hollow chest, curvatures of spine, impeded respiration and circulation, constriction of large blood vessels of neck when bent, causing congestion of brain and eyes, and thereby predisposing to headaches and defective eyesight.

"For writing and reading, and meals and music the patient should be seated on a chair deep enough to support his thighs, yet not to interfere with flexion [bending] at the knees. It should incline slightly backwards, but arch forwards in the lumbar region [small of back]. The desk should be sufficiently close to the body to prevent leaning forwards, and the height should be slightly less than the level of the elbows, and the inclination just sufficient to keep the book at a proper [angle and] distance [*e.g.*, 14 inches] from the eye.* The patient should be educated to hold herself always in her best possible position, and should sleep on a hard mattress without pillows." (*Robert Jones*).

Another point consists in finding the exactly opposite posture to that habitually taken, and keeping the child in it for a certain time each day.

In the case of right-dorsal lateral curvature the child should be directed to bend to her *right* side, the right arm should be lowered, the left one raised or placed behind her head. This position should be maintained for some time, and often repeated. Also when in this position the trunk should be rotated to the *left* side with the body bent backwards in the effort. While the bending takes place pressure should be applied to the prominent rib-hump on the right side, a pressure diagonally towards the often prominent, *left* breast, which may also be pressed towards the rib-hump with the other hand.

In addition to this (and many other good postures which cannot be described in these notes) exercises should be given to strengthen **all** the erector muscles of the back, and **massage** given to stimulate them and increase their blood circulation.

The gymnastic treatment of "round shoulders" should be directed to drilling the child in holding herself correctly. The following exercises prescribed by Lovett are simple and effective:—

(a). The patient hangs from a bar by the arms.

(b). The patient lies on the back with a hard roll under the scapulæ (shoulder-blades), while the arms are extended and stretched by an assistant pulling them above the head upwards and backwards.

(c). The patient sits on a stool with the hands behind the head and the elbows squared; the elbows are pulled backwards, while the knee of the manipulator presses forward against the spine on a level with the shoulders.

In lateral curvature arising from unequal length of legs from any cause, *e.g.*, past hip disease, infantile paralysis (*see p. 78*) the obvious remedy is to rectify the length of the limb, as by a properly adjusted high boot. Further treatment is to stand on and develop the small hip, and thus to tilt the pelvis (hip) and spine in the opposite direction. The

* The "**Erectnek**" is a useful combined reading stand, writing board, and table easel. It can be obtained from ARTHUR ENGLEFIELD, Longford, Glos.

muscles of the small hip and side should be developed by leg exercises performed whilst the child is *lying down*, and never when standing on the short leg the side of the big hip.

Note that the original cause of this form of curvature may be overlooked, and the effect taken to be an evidence of spinal disease. Note also that the spinal condition once started may develop to excess of compensatory requirements, and this superfluous curvature become a painful disease-complication grafted on the original affection.

FLAT-FOOT.

Another very common weakness amongst children is a dropped instep, or flat-foot as it is called.

The muscles of the foot and the ligaments that support the bony arch of the instep become weakened and yield, with the result that the arch flattens down. It is a painful condition often found in weakly children about twelve years old, and is the product of rickets or rheumatism, or of any general debility left after an acute fever or prolonged illness.

When one leg is affected more than the other, the base of the spine is rendered untrue, and lateral curvature often results.

The cause is weakness of the muscles which hold up the instep. As these (the tibialis anticus and posticus) are the muscles which also invert the sole and turn the foot inwards, a weakness and stretching of them will result in the foot being turned outwards, and the child walking on the inner border of the foot. The muscles on the outer side of the leg (the peronei) are over developed and shortened. They draw up the outer edge of the foot and turn the feet outwards. The inner ankle-bone is prominent, and the sinking arch of the foot on, or near the ground. The elasticity of step is lost, the body easily becomes fatigued, pain and weariness in the feet and legs are felt, hence the child is in a condition predisposing it to adopt a bad position which may lead to a lateral curvature of the spine requiring treatment.

A good support to the arch of the foot should be first applied, either by a bandage or by a suitable block being placed in the boot; the inner side of the sole and heel raised by one-eighth of an inch to throw more weight on the outer side of the leg and to stretch the peroneal muscles; and the heels of the boots cut long and obliquely, so that they project further along the sole on the inner than on the outer side of the foot. Exercises should be given twice daily to strengthen the weak muscles on the inside, and to lengthen those on the outside of the leg, *viz*:—

(1.) Turn the feet inwards against resistance. (This is best done by the hands of another person).

(2.) Rise on the toes with the feet close together.

(3.) Rise on the toes but separate the heels as they rise, the toes being kept together.

(4.) Walk on the outer border of the foot.

(5.) Sit on the floor in a cross-legged position with the outer border of the feet resting on the ground, this will relieve the strain on the instep, and be a comfortable position.

(6.) Standing, lift the toes alternately from the ground, quickly repeating until tired.

(7.) Skipping, tripping, and running on the toes should be encouraged, and all will improve the condition of the feet and develop a good instep.

Dancing and drill mistresses should note that walking with out-turned toes is a direct incentive to knock-knee, everted feet, and flat-foot.

WEAK ANKLES.

The condition known as "weak ankles" or "ankles growing out" is very common in children. It is caused by a yielding of the ligaments or either side of the ankle, so that not only does the gait become weakened and tottering, but there is a tendency to sprains at the ankle through the foot giving way and doubling up towards the weaker side.

With regard to the use of boots in this affection. Boots support the ankles, but cause weakening of the muscles from disuse in proportion as they hold the joint. On the other hand, if the ankles are very weak, and shoes are worn, these are apt to turn over, and the ligaments supporting the joint to become stretched, and therefore deprived of any chance of tightening up. It is obvious that no definite rule can be stated; it will suffice to say that no tightly laced boots should be worn at the expense of exercising the muscles, and that low and broad heels are necessary to afford a firm base for the foot with its wobbly ankle.

Useful exercises for strengthening weak ankles are:—

1. When sitting, lift the toes from the ground; when standing bear weight of body on one foot, and lift body on each leg alternately.
2. Push toes against the resistance of some solid object, *e.g.*, table.
3. Put feet together, standing on heels turn toes a little out; then standing on toes turn heels a little out; repeat movements until feet are separated. Then reverse movements until feet together again. This opening and closing of the feet, combined with toe and heel lifting, is a valuable exercise for all parts of the ankle.
4. Balancing movements, etc., previously described.

CHEST AFFECTIONS.

The chests of many children are small and undeveloped. Contracted chests and collapsed lungs mean impaired breathing and ill-health, and an increased liability to consumption and other lung affections. If a child's chest fails to develop properly it should be medically examined. Every child's chest can be developed to a fair standard by proper breathing and physical exercises. The chest should be expanded in all directions by exercises which draw back the head and shoulders, and which vault the chest and inflate the lungs. Hanging by the arms has a splendid effect, for it forcibly lifts the ribs, and therefore develops the muscles of inspiration. The chest is increased in size laterally as well as vertically by the child swinging its body when hanging. Bending the trunk backwards also stretches and vaults the chest, and improves shallow and difficult breathing.

The vital measurement is, not chest capacity simply, but difference between the full and the empty chest, *i.e.*, the *difference* between the fullest expansion and the greatest contraction. The point to be gained is the healthy functioning of the lungs, *i.e.*, the development of lung tissue and respiratory power, not the mere increase of chest capacity.

The breath should be taken through the nose, which cleans, moistens, and warms the air. It should also be forcibly expelled through the nose, as a preventative against the growth of adenoids, and to clear the nasal passages. The well-known injunction, "Shut your mouth; keep your mouth shut," should be one of the golden rules of childhood, for respiration can only be carried out properly when the air enters the chest through the nose. (*Vide p. 53*).

In cases where the chest walls are unduly soft, *e.g.*, in children suffering from rickets, or where there is debility combined with nasal obstruction, *e.g.*, adenoids, deformities of the chest arise through sucking in of the softened ribs during inspiration, pulling in of the lower ribs by an over-active diaphragm, and the pushing forward of the more unyielding sternum.

In "pigeon-breast," the sternum (breastbone), is prominent, and the ribs are depressed laterally to form a groove running downwards and outwards on each side of the chest wall. In cross section the chest now resembles a triangle with the sternum forming the apex.

Where there is any mechanical obstruction it is obvious that breathing exercises are of little or no use until the obstruction is removed. The special treatment of "pigeon breast" is to make a strong even pressure on the sternum as the child breathes in. This will prevent the chest rising forward, and so force it to expand at the sides.

Every part of the lung should be developed, the lower lobes as well as the upper (but not at the expense of the upper, which are often the ones first attacked by cold and disease). To ensure the breath going into the right part of the lung the following hints may be useful:—

If on inspiration the arms are raised sideways the lowest lobes are filled laterally. If the arms are raised above the head from a position level with the shoulders, and palms turned upwards, the upper (clavicular) region will be developed. Examples of breathing exercises are:—

(1.) Deep quick inspiration, long expiration.
(2.) Deep long inspiration, quick expiration.
(3.) Deep long inspiration, pause, quick expiration.
(4.) Breath in by 3 deep sniffs, long expiration.
(5.) Long inspiration, 3 gasps out by the mouth.
(6.) Breathe in, then count aloud, 1, 2, 3, repeat and repeat, each time throwing the chest further forward.

These exercises are best combined with arm movements which lift the chest, and not more than two should be given at a time. They may be repeated after other exercises have been done, but too many at a time exhaust the lungs, and cause a feeling of sickness, dizziness, and headache. This is often the reason why too zealous advocates of breathing exercises fail to achieve their purpose. Breathing may be over-done as easily as anything else.

The following simple exercises can also be recommended:—

(1.) Extend the hands and stretch the arms forwards from the shoulders, leaving about a foot between the hands, which should be turned with the palms inwards and fingers stretched out straight. Slowly move the arms backwards as far as they will go (while deeply inspiring), and slowly bring them forwards until they are in the same position as at starting (while deeply expiring). Repeat this from three to six times.

(2.) Hold the hands down with the palms against the legs. Raise them with palms inwards (inspiring), and when they are immediately above the head turn the palms outward and slowly bring them down to the sides (expiring). Repeat from three to six times.

(3.) Hold the hands against the thorax, with the fingers pointing inwards and touching back to back. Then with a swift movement swing the arms out as far as they will go (while inspiring). Begin again (expiring), and repeat half-a-dozen times.

(4.) Keep the arms down, the palms touching the sides, slowly turn the palms outwards as far as they will go (inspiring), and slowly bring them back to the sides (expiring). This may be done six or eight times. This exercise, apparently so simple, expands the chest and presses together the shoulder-blades (*British Medical Journal*).

CONSTIPATION.

This is sometimes a tiresome and persistent complaint of children who do not run about, or take as much exercise as their stronger brothers and sisters.

Although children do not need abdominal exercises in the same way as adults, they often suffer from the want of them when leading a quiet and restrained life.

(1.) Skipping should be encouraged. The contraction of the abdominal muscles in performing the jumping, the gentle vibration to the organs, and the increased respiration and circulation these exercises involve, generally have the desired effect.

(2.) Lying on the back, draw the legs up to the trunk, first alternately, then together.

(3.) Lying on the back, raise the trunk into a sitting posture, at first swinging the arms, but later on without their help.

(4.) Standing, bend the body sideways, and (5) also forwards, and touch the toes.

(6.) Rotate the body from side to side, swinging the arms sideways at the same time.

These exercises will strengthen the abdominal muscles so that they will better support the viscera, also give tone to the bowel, and increase its peristaltic action whereby the excreta are more regularly expelled.

CHOREA (or St. Vitus' Dance).

This brain disturbance may be much remedied by gentle, rhymical exercises, in addition to the general toning-up of the system by fresh air, proper food, sound sleep, and careful, physical and moral supervision.

Simple rhythmic exercises, such as parting the arms, keeping time to some familiar tune or nursery rhyme sung at the same time. The child is gently encouraged to keep time with the music, and the movement is made regularly, avoiding the coincidence of involuntary movements with the rhythmic ones. Similar exercises are then done with the legs, etc., but all the movements must be simple and of short duration. Care must be taken not to demand too much will power of the child in the beginning, for if the limit is over-stepped, instead of a soothing effect we get increased excitability. The exercises should be given brightly, to imitate play, with gentle firmness, never reproving the child for its inco-ordinate movements, but always encouraging the rhythmical ones. Massage and douching (sea water) of the spine and body will also impart tone and improve this condition.

In conclusion it must be remembered that it is not enough to allow the child to choose its own exercises, or even its play. The things which a child likes best to do are those which are easiest to it, *i.e.*, where the strongest muscles are brought into play. It may safely be said that these exercises are exactly the ones they need the least, and are done at the expense of using other and weaker muscles.

Exercises have also been devised for heart disease and other affections. Generally speaking, in chronic valvular disease of the heart out-door exercise is beneficial so long as it does not produce palpitation, etc.

[These exercises (unspecified) have been prepared for this work by Miss Irené M. Marsh, N.S.P.E., Lady Director of the Liverpool Gymnasium, and Principal of the Liverpool Gymnasium Training College. This able teacher writes, "I can speak for the value of every exercise from practical experience."]

STAMMERING; VOCAL EXERCISES.

Stammering or stuttering is a nervous affection of speech which is commoner in boys than girls. The misery caused to the sufferers is very great, and the injury to their careers, disposition, and character almost incalculable. Stammering may make a nervous boy's life unendurable to him at school. Fortunately there are few absolutely incurable cases if proper treatment is adopted.

In every case of stammering it is necessary first to ascertain the part of the mechanism which is at fault, and in order to do so, an intelligent understanding of the physiology of speech is required by those in charge of its treatment.*

Speech is composed of words, and words of vowels and consonants. Vowel-sounds are produced in the glottis by vibrations of the true vocal cords, which are set in action by currents of air passing over them in expiration. Consonants are formed by interruption of the current of air in some part of the air passages above the larynx.

The obstruction to the current of air which causes the formation of consonants may be due to :—

1. Closure of lips (first stop position), *e.g.*, B, P, M.
2. Pressure of tongue against teeth and fore part of hard palate (second stop position), *e.g.*, T, D, N.
3. Approximation of back of tongue to soft and hard palate (third stop position), *e.g.*, G, K, X, Z.
4. Spasms of false vocal cords preventing exit, spasm of true vocal cords preventing entrance of air (fourth stop position). Speech is now either impossible or inaudible.

In all speech therefore, three mechanisms are employed, *viz.*, those of (1) Breathing (respiratory), (2) voice production in the larynx (laryngeal), (3) word-making in the mouth (oral). In stammering there is want of co-ordination between the breath muscles and the vocal muscles, and between the oral and laryngeal mechanisms. Consonants being formed within the mouth, and vowels within the larynx, it is evident that clear articulation depends upon the harmonious working of mouth and larynx, and upon the expiratory blast in the act of breathing-out being of sufficient and continuous strength to set the vocal cords into steady vibration in voice production.

Stammering is due to spasm of the respiratory muscles in the act of speech. This over-action of the respiratory nervous centres producing the spasm rapidly spreads into the centres controlling the laryngeal and oral mechanisms, and leads to spasm of the muscles of the throat, mouth, and face. In a bad case, perhaps other parts of the body are similarly affected.

The primary seat of the trouble is, however, in the breathing mechanism; the spasmodic disturbance of the muscles of articulation is really a secondary event in a "speech storm" commencing in the breathing mechanism when the stammerer attempts to speak. "This fact must never be lost sight of in the treatment." (*Robert Worthington*).

Few stammerers do not require medical aid. Affections of the mouth, throat, or nose, or any morbid condition of the upper respiratory passages or other part of the system which may cause stammering, or aggravate habitual stammering, should receive medical treatment. All hindrances to nasal breathing should be removed, and the child must be taught to breathe through the nose, to expand its chest, and to speak slowly and distinctly. Those who have the care of the child should themselves speak very slowly and distinctly.

*Consult "Stammering, Cleft-Palate Speech, and Lisping," by Mrs. Emil Behnke, 18, Earl's Court-square, S.W., who receives Stammerers for Treatment.

The diet should be free from everything indigestible, and the child be encouraged to masticate slowly and thoroughly. Young men who stammer should not smoke. A healthy out-of-door life is much to be desired, for it strengthens the nervous system and helps to counteract the nervousness which is the outcome of the stammering. Stammerers require more rest and sleep than others because of the muscular fatigue engendered by their struggles to articulate, and the nervous exhaustion which they suffer in consequence of the dread of speaking.

With regard to **exercises**. It should be clearly understood that the cure for the stammerer should only be undertaken by those who have made a special study of the subject and have had practical experience, for each case presents its own idiosyncrasies, and new rules have to be made to suit these as they arise. Some Education Authorities, *e.g.*, London and Manchester, have found it expedient to form special classes of stammerers for curative instruction by experts.

The following exercises may serve to check early cases:—

BREATHING.

1. Inflate and deflate the lungs ten or twenty times first drawing the air in slowly through the nostrils, and hissing it out in a steady stream through scarce-parted lips.

2. Repeat the exercise breathing rapidly in and out.

3. Repeat exercise 1: (*a*) inhaling through left nostril and exhaling through right; (*b*) inhaling through right and exhaling through left nostril.

4. Stand erect, hands touching thighs; slowly raise hands out from sides to above head at the same time filling the lungs. Revert to the first position during expiration.

5. Also practise breathing exercises previously described. (See p. 118)

ARTICULATION.

1. Speak (in most useful octave) the vowels *oo*, *oh*, *ah*, *ai*, *ee*. Prolong the sounds and increase force steadily until great power is gained.

2. In addition to the forgoing exercises, the patient should read *aloud* for at least one hour daily in the presence of the parent or teacher. The child should read *very slowly*, and with a careful distinct utterance of every syllable. Let the reading be in a pleasing, *musical* tone and let the pitch of the voice be raised occasionally.

The following precepts should be carefully noted:—

In breathing—whether the child be exercising the lungs, or reading—the shoulders should be kept *down and still*, the chest raised, and the respiratory movements felt chiefly about the waist of the body, especially around the sides and the back. Do not allow the child to thrust out the stomach.

Read and speak from the front of the mouth, as down a tube. The habit of arresting the voice in the throat is most injurious, and provocative of thick, indistinct articulation.

Both in the practising of the articulation exercises, in reading and in speaking encourage the patient to:—

(*a*) Open the mouth adequately.

(*b*) Use the lips in the framing and delivery of words.

(*c*) Read slowly, syllable by syllable.

(*d*) Keep the will exerted on the voice to the utterance of the last syllable.

(*e*) Take a deep breath before speaking, and at every stop, and whenever stammering comes on.

Speak firmly and clearly each of the following exercises :—

(*a*) Opening the mouth wide before the utterance of each word.

(*b*) Speaking each exercise in one breath.

Black babbling break brawling o'er their bounds.

The painted pomp of pleasure's proud parade.

Decide the dispute during dinner-time by dividing the difference.

Tourists thronged from time to time to traverse the Thames tunnel.

Gregory going gaily galloped gallantly to the gate.

Crazed with corroding cares and killed with consuming complaints.

Vanity of Vanities and all is Vanity.

Frank Feron flattered his friends and found fault with his foes.

His zeal was blazoned from zone to zone.

Serpents and snakes were scattered on the sea.

Judge and jury adjourned the judgment.

Chosen champion of the church he cherished her children.

The azure sea is shining with ships that shape their course for home.

This thread is thinner than that thistle there.

Year after year the o'er ripe ear is lost.

Up a high hill he heaved a huge hard stone.

We wildly wish while wiser workmen win whate'er will worth reward.

And rugged rocks re-echo with his roar.

Lamely the lion limped along the lawn.

Many men of many minds mixing in multifarious matters of much moment.

None know nor need to know his name.

England's king lay waking and thinking while his subjects were sleeping.

[*From "Studies in Elocution" (copyright), by permission of the author, Mr. Alf. Lowry, Professor of Elocution, 56, Mount Pleasant, Liverpool. Mr. Lowry is also an expert in the treatment of Stammering.*]

Attention should be specially directed to the following points :—

1. Find out which letters, *e.g.*, B, P, T, give the greatest difficulty, and insist upon continued practice with words and sentences containing them.

2. Slovenly habits of speech in the teacher and parent produce similar habits in the scholars and children.

3. Stammering is catching, *i.e.*, children by *imitation* catch it from one another. Stammering children should therefore be kept apart.

4. Children will not "grow out of it." The possibility of cure becomes less every year. A bad habit of speech is easily formed.

The training should be continued until there is no more difficulty in reading or talking under any circumstances. Permanent success depends upon the stammerer himself. Carelessness in controlling his speech may speedily cause a relapse. In this his relatives can assist him, by kindly and quietly keeping him "up to the mark," and reminding him of every lapse from the right way to speak.

THE DOCTOR IN THE SCHOOL.

Local education authorities are now required to carry out Medical Inspection of school children. The teacher will be expected to co-operate with the doctor in the school. Note the conditions outlined below :—

(1) Previous disease, including infectious diseases.

(2) General conditions and circumstances :—

(*a*) Height and Weight.

(*b*) Nutrition.

(*c*) Cleanliness :—i. Dirt. ii. Vermin.

(*d*) Clothing :—i. Sufficiency. ii. Cleanliness. iii. Boots.

(3) Tonsils—Adenoids—Nasal Obstruction—Enlarged Glands—Stammering.

Defects of articulation may be caused by missing teeth ; to physical defect of the mouth, tongue, or throat ; or to a nervous disorder as in the case of stammering.

(4) External Eye Disease—Vision.

(5) Ear Disease—Deafness.—Tested by watch or forced whisper.

(6) Teeth.

(7) Mental Capacity.

(8) Skin Diseases.

(9) Signs of Infectious Diseases.

These are useful "Hints as to Infectious Diseases" issued to teachers from the Brighton Public Health Office :—

1. Any scholar having a sore throat should be sent home, and regarded as infectious until the throat has been inspected by a doctor.

   If a scholar has enlarged glands in the neck, and especially if he or she is very pallid, the suspicion of possible diphtheria should be entertained. *Many slight cases of diphtheria escape detection.*

2. Any scholar suffering from a severe cold, with sneezing, redness of the eyes, and running at the nose should be sent home. It may mean an influenza cold or the commencement of measles, and both are infectious. This recommendation is particularly important when measles is known to be prevalent.

3. A child with a violent cough, especially if it is severe enough to cause vomiting or nose-bleeding, should be suspected of whooping cough, and sent home, even if the characteristic "whoop" is not heard. [The "whoop" may be absent. It does not appear for 7-14 days, the very time when the disease is most infectious.]

4. Slight cases of scarlet fever sometimes escape notice, and the patients are sent to school with the skin on the hands, etc., freely "peeling."

5. In any of the above instances, or any other case of suspicion, the medical officer of health, on receiving a confidential intimation, will be glad to make an investigation.

(10) Any of the following if present :—

(*a*) Deformities or paralyses. (*b*) Rickets. (*c*) Tuberculosis (glandular, pulmonary, osseous, &c.). (*d*) Diseases of heart or lungs. (*e*) Anæmia. (*f*) Epilepsy. (*g*) Chorea. (*h*) Ruptures. (*i*) Spinal disease. (*j*) Any weakness or defect unfitting the child for ordinary school life or physical drill, or requiring exemption from special branches, or special supervision.

The doctor in the school would note these two types of children :—Underfed or badly nourished—Anæmic ; hair dry and wispy ; often a peculiar greenish pallor of the skin and an eager look ; emaciation. Scrofulous and tubercular—Anæmic ; often plump ; usually fine skinned and with delicate complexions, easily flushed ; eyelashes long ; bones small.

EXTRACTS FROM THE MEMORANDUM

ON

MEDICAL INSPECTION OF CHILDREN

UNDER SECTION 13 OF THE EDUCATION (ADMINISTRATIVE PROVISIONS) ACT, 1907.

[*Issued by the Board of Education, November* 1907.]

The Board are convinced that the work of medical inspection cannot be properly accomplished by medical men without assistance. The teacher, the school nurse (where such exists), and the parents or guardians of the child must heartily co-operate with the school medical officer. In whatever way the system be organised, its success will depend, immediately and ultimately, upon the cordial sympathy and assistance of the teachers. . . . .

From what has been said it will be clear that the fundamental principle of Section 13 of the new Act is the medical examination and supervision not only of children known, or suspected, to be weakly or ailing, but of all children in the elementary schools, with a view to adapting and modifying the system of education to the needs and capacities of the child, securing the early detection of unsuspected defects, checking incipient maladies at their onset, and furnishing the facts which will guide Education Authorities in relation to physical and mental development during school life. . . . .

It cannot be doubted that a large proportion of the common diseases and physical unfitness in this country can be substantially diminished by effective public health administration, combined with the teaching of hygiene and a realisation by teachers, parents, and children of its vital importance. . . . .

THE ROYAL SANITARY INSTITUTE.

EXAMINATION FOR WOMEN HEALTH VISITORS AND SCHOOL NURSES.

Many Local Authorities have in recent years appointed Health Visitors to carry out sanitary inspection and visiting in their district.

These Health Visitors have proved of great value in the sanitary service, especially in visiting the homes in the poorer districts, and by advising with regard to the home arrangements, and the feeding and care of children, have done much to assist in the improving sanitary conditions and reducing infant mortality. . . . The nature of their duties renders it important that they should be more specially qualified in other matters relating to personal hygiene and the care of children, which do not come within the scope of the duties of an Inspector of Nuisances set out by the Local Government Board.

Moreover, as the inspection of school children becomes general, it will probably be found necessery to appoint School Nurses as suggested in a memorandum issued by the Board of Education, whose duties will approximate to those of Health Visitors.

The Council of the Royal Sanitary Institute, after careful consideration, have therefore decided to establish an Examination for Health Visitors and School Nurses.

The syllabus includes General Structure of the Body, Personal Hygiene, Air, Water, Food, Clothing, the Dwelling, Elements of Home Nursing, Care of Infants and Young Children, Prevention of Communicable Diseases, First Aid, Treatment of Injuries, Ailments and Accidents, and Statistics.

For further particulars address The Royal Sanitary Institute, 72, Margaret Street, London, W.

SCIENCE IN THE KITCHEN.

How to provide sufficient food on a small income is a problem which faces many poor parents. Partial starvation is not uncommonly the result, and generally it is the children and mother who suffer most. Underfed women cannot be the mothers of healthy children, nor can underfed children grow up into the sturdy men and women required by the nation in these days of strenuous competition. Indeed it is said that "there is not a shadow of doubt that many children annually perish from what is virtually starvation." The problem of providing sufficient food with limited means is therefore one of individual and national importance. Dr. Niven, the medical officer of health for Manchester, has shown that even low wages allow purchase of ample food were the money properly spent, and that families are often unprovided with sufficient food and are semi-starved through mothers' ignorance of the nutritious value, provident purchase, and economical cooking of food stuffs. It is stated that a family of five may be kept in perfect health and strength on food costing 10s. a week or less, *provided* the house-keeper is unmindful of luxuries, and understands how to market so as to get the largest amount of nutritious material for her money. When there are children under two or three years old in the family, milk is necessary—and this is an expensive article of food. Yet milk should be given without fail up to the end of the third year. The body requires a definite quantity of certain substances daily. If it gets an insufficient supply of **proteid** (*e.g.*, milk curd, white of egg, meat fibre) vitality is lowered, resistance to disease is less, and the body tissue is not repaired, so it crumbles away; if **fats** and **sugars** are deficient its fuel fails, the supply of heat and energy falls short, and the body burns its own tissues and fails to work efficiently.

From the following two tables it will be seen how extravagantly or economically money may be spent on food. The first gives the cost of a pound of proteid, the body-building material; the second shows how many calories of heat and energy can be purchased for 1s. The average man requires daily about 5oz. of proteid, and food sufficient to furnish 3,500 calories of heat [calorie=heat required to raise 1lb. of water 4° F.]

ONE POUND OF PROTEID COSTS.

0s. 7d. in dried split peas, at 1½d. lb.	1s. 6d. in cheese, at 6d. lb
0s. 8d. in haricot beans, at 2d. lb.	1s. 7d. in ox liver, at 4d. lb.
0s. 8d. in herrings, at two for 1d.	1s. 8d. in Cheshire cheese, at 9d. lb.
0s. 8d. in lentils, at 2d. lb.	2s. 3d. in frozen mutton, at 5d. lb.
0s. 9½d. in marrowfats, at 2d. lb.	2s. 6d. in beef, at 6d. lb.
1s. 0d. in fine flour, at 1½d. lb.	3s. 10d. in milk, at 4d. quart.
1s. 2d. in oatmeal, at 2d. lb.	5s. 1d. in eggs, at 1d. each.
1s. 3d. in white bread, at 4d. quartern.	

CALORIES PURCHASABLE FOR 1s.

1,529 calories in apples, at 2d. lb.	10,186 calories in sugar, at 2d. lb.
2,638 ,, in cheese, at 6d. lb.	10,894 ,, in oatmeal, at 2d. lb.
2,884 ,, in butter, at 1s. lb.	15,636 ,, in fine flour, at 1 1-6d. lb.
3,000 ,, in milk, at 3½d. quart.	16,740 ,, in cotton seed oil.
8,652 ,, in lard, at 4d. lb.	

Conclusions to be drawn from these tables are that bread is one of the cheapest sources of energy. That the cheaper fats and oils are a good investment for the poor, and that economy can be achieved only by suitable combinations. Among these are bread and milk, bread and cheese, bread and herrings, oatmeal and margarine, or butter or cheese, oatmeal porridge and sugar, peas and oil.

A knowledge of the value of vegetable foods is important to the housewife. **Peas, beans,** and **lentils** have been called "the poor man's meat." They are somewhat difficult to digest, but properly cooked they form a splendid diet for an active man. **Flour** must be marked as the most valuable of all our foods. "Seconds" flour, although poor in colour, is richest in proteid. **Oatmeal** is a food very rich in proteid and other ingredients. To make it palatable and digestible it should be thoroughly boiled. Porridge and milk make an almost perfect diet. **Potatoes** are most nutritious when cooked in their jackets, or steamed. **Cabbages** and other greens contain valuable salts which keep the blood in good condition. The salts dissolve in the water in which these vegetables are boiled, so that such water should be preserved to form the liquor of soups or broths. Onions, turnips, and carrots are more nutritious than greens. **Jams** contain sugar in an appetising form. Children should not always be given bread and jam instead of bread and butter or bread and dripping.

A pure vegetable diet means eating a great bulk of food and no little strain on the digestive organs, so that for most people a mixed dietary is the best and cheapest. **Herrings** during the season are both economical and nourishing. Fish rich in fat such as the eel, herring, and mackerel, have greater energy value than fish poor in fat, such as cod, whiting, and haddock. **Cheese** is a cheap source of proteid. A cheap American or Dutch cheese is more nourishing than a Stilton or Gorgonzola. A pound of American cheese, costing 6d., contains almost as much nourishment as 2 pounds of the best beef-steak, costing 1s. per pound. Grated into macaroni pudding is a cheap way of giving it. **Milk** is a very valuable and complete food. Skim milk is a cheap source of proteid, and provided dripping is used to replace the cream (fat), it is excellent for making soups or puddings. **All meats are dear foods,** so that people with small incomes should spend little money on meat, and buy more cheese, peas, beans, bread and cheap fish. Fat in BACON is easy to digest, whilst the fat in PORK makes it more difficult to digest than beef or mutton. Meat may be given minced and cooked economically as in a pasty. Meat is more digestible when "underdone" or boiled. TRIPE is nutritious and easily digested. LIVER is rich in proteid, but requires thorough chewing to make it digestible. SUET and DRIPPING are valuable sources of fat. Weight for weight, dripping contains more fat than butter, and it is just as wholesome and digestible. MARGARINE is wholesome and excellent. Good margarine is better than bad butter.

The rich consume too much proteid, the poor too little; yet it is only in cases of great poverty that this deficiency of proteid is due to lack of means to provide it. **Fat** is a more expensive article of diet than carbohydrate, *i.e.*, sugars, and is indispensable for children unless **rickets** be sought. Though children often dislike crude fat they can generally take it in combination as in pastry, pasty, and pudding, or cooked with potatoes and pulses, or on bread or toast, or in toffee, chocolate, or cocoa, or as suet grated into milk.

HOW TO FEED CHEAPLY; THE FAMILY BUDGET.

"How to feed a family of five on 12s. 9d. a week" is a proposition that should command the attention of every housewife who has to contrive to get the most out of a shilling. The York Health and Housing Reform Association is concerned with the waste of wages on expensive foods, and has prepared a dietary which covers a week, and will supply five members of a family for 12s. 9d. with a maximum of nourishment at a minimum of cost. This scheme of meals shows how a few cheap kinds of nourishing foods can be varied to seven different dinners, together with variety in breakfast and suppers.

Monday.—Breakfast: Porridge and treacle, tea, bread and dripping, herrings (3). Dinner: Barley broth, boiled meat, and potatoes. Tea: Tea, bread and jam. Supper: Brown bread, dripping, cheese, cocoa and milk.

Tuesday.—Porridge and milk, tea, bread, dripping (or fried bread). Dinner: Broth re-heated, with dumplings and bread. Tea: Tea, brown bread and treacle. Supper: Cocoa, bread, dripping, cheese.

Wednesday.—Tea, bread, dripping, porridge and treacle. Dinner: Stewed liver, green peas (marrowfats), mashed potatoes. Tea: Tea, currant bread. Supper: Cocoa, milk, bread, dripping, grilled herrings (2).

Thursday.—Tea, bread, dripping, herrings or kippers (3). Dinner: Lentil soup, fig pudding. Tea: Tea, currant bread. Supper: Cocoa, brown bread, stewed tripe and onions.

Friday.—Porridge and treacle, tea, bread and dripping (or fried bread). Dinner: Irish stew, rice and currant pudding (for children). Tea: Tea, brown bread, treacle. Supper: Bread, dripping, cheese, cocoa (half milk).

Saturday.—Tea, bread, dripping, fried or baked herrings (3). Dinner: Boiled meat pudding, potatoes. Tea: Tea, bread, jam. Supper: Cocoa, brown bread, baked onions.

Sunday.—Tea, bacon, bread and dripping (or fried bread). Dinner: Stewed breast of mutton, with savoury balls, potatoes. Tea: Tea, bread, dripping, fried potatoes. Supper: Hot milk, bread, dripping, and cheese.

To those who can afford to spend even an extra sixpence or shilling a week this diet would be more interesting. The thoughtful housewife, taking this table as a starting-point, may ring many changes on it without reducing its feeding value. The amount and cost of food in the dietary is as follows:—

	s.	d.
2¼lb. Oatmeal at 2d.	0	4½
16lbs. Flour at 1s. 4d. stone	1	6¼
5lbs. Wheaten Flour at 1s. 6d. stone	0	6½
1½lbs. Treacle at 2d.	0	3
6ozs. Jam at 4½d. lb.	0	1⅝
3lbs. Sugar at 2d.	0	6
14lbs. Potatoes at ½d.	0	7
2 Turnips and 4 Carrots	0	2
½lb. Barley, 1½d.; ½lb. Rice, ½d.; 12ozs. Lentils, 2d.; 1lb. Green Peas, 2½d.	0	6⅛
3½lbs. Onions at 1d.	0	3½
½lb. Figs at 3d.	0	0¾
½lb. Currants at 4d.	0	2
8ozs. Tea at 1s. 3d.	0	7½
6ozs. Cocoa at 10d. lb.	0	3¾

	s.	d.
5lbs. Meat—Liver, 5d.; Shin of Beef, 6d.; Breast of Mutton, 4½d.; Scrag end of Mutton, 6d.; Scrap Beef, 4½d.	2	2
1lb. Tripe at 6d. lb.	0	6
½lb. Bacon at 7d	0	3½
½lb. Cheese at 6d.	0	3
8 quarts Skim Milk at 1½d.	1	0
11 Herrings at 9d. dozen	0	8¼
2lb. 15ozs. Dripping at 5d.	1	2¾
Sundries—Baking Powder, Ginger, Herbs, Yeast, Salt, Pepper, &c.	0	4½
Bones	0	2
Total	12	9

COOKING AND PREPARING FOOD.

Cooking is intended to make food fit for consumption. By breaking the food up it makes it more easily masticated and acted upon by the digestive juices. Another important use of cooking is that it kills any germs, parasites, or eggs which may be in the food. Only a good cook can utilise food to the full extent without waste; in other words, "make it go furthest." House-craft demands brains and cultivated skill; to be a good cook and manager should be the ambition of every housewife.

Bad cooking sometimes makes food quite indigestible: for instance, excessive heat hardens the surface and leaves the inside uncooked. Too much boiling (or roasting) consolidates the albumens and renders them indigestible. In boiling meat, two facts should therefore be noted, (1) bring it slowly to the boil; (2) afterwards allow it only to simmer. Baked and fried meats are generally difficult to digest, and for this mode of cooking the best joints and cuts are necessary. Roast and grilled meats are easily digested if not overdone. But this is not an economical mode of cooking, as a great deal of fuel is needed, the meat loses weight, and only the best kinds of meat can be done by these processes to ensure satisfactory results.

Stewing is the most economical method of cooking meat, for by it nothing is wasted, less fire is needed, and the cheaper and coarser meats may be used. Time, however, is required, for long and gentle stewing by the side of the fire or in a slow oven is the secret of success. Flour and vegetables may be mixed with the water, which thus becomes a rich thick gravy. Arrowroot, rice, potatoes, and the foods rich in starch should be well boiled so that the granules are broken up.

In severe illnesses and stomach derangements, note that solid food is almost always undigested, and is worse than useless, as it ceases to be a food but becomes an internal **irritant.** In sickness, only prepare the amount of food required each time; do not offer excess of food, for it will most likely disgust the patient; do not keep food in a sick room, and certainly *never* leave food or drink uncovered and exposed to contamination. Remember that Wines and Spirits do **not** strengthen a patient; in illness, alcohol has probably killed more patients than it has cured! The juice of the grape has its virtues; but it often requires a wise head to discern them. Beef tea and many of the meat extracts of commerce are very costly and of little value as foods, and, like alcohol, are chiefly useful as stimulants of the stomach and heart. Home-made beef tea is a misunderstood product of the cooking art, and when made in the ordinary way is little more than coloured and scented water. Some useful invalid foods are:—Raw egg beaten up with milk, tea, coffee, or beef tea; egg flip; custards and jellies; milk tea and milk coffee—made with milk instead of water (this may be made into a jelly with a little isinglass); milk gruel; bread and milk, milk prepared as already described under feeding of infants.

N.B.—The so-called need for alcohol is generally the result of habit. A craving for alcohol is common in neurotic constitutions, and there is a danger of its abuse in these cases. Never give spirits or wines as a remedy without doctor's orders. Never press a doctor to order his patient alcohol—it is easier to accede than to protest.

SOME RECIPES FOR MOTHERS.

Sheep's Head Broth.—Head thoroughly cleaned and soaked all night in salt and water. Next morning wash it thoroughly and put in saucepan with 4 quarts of cold water, 1 teacupful of barley, do. of green peas (soaked overnight), do. of carrot cut in squares, do. turnip, do. celery, do. leeks or onions sliced, seasoning of salt, pepper, and sweet herbs. Boil slowly for 3 or 4 hours; then take out all bones, etc., and serve broth. Boiling broth may be thickened with 2 tablesps. oatmeal blended in basin of water. To ensure clearer broth it is better to boil the head alone the day before wanted, strain, and next morning skim off all fat, then add vegetables and simmer gently about 1½ hours.

Mutton Broth.—1½ lbs. neck of mutton (scrag-end), cut in small pieces, add water and vegetables as for sheep's head broth, place in pan, simmer slowly 3-4 hours. This does not require straining, simply take out all bones and leave the meat in the broth.

N.B.—All liquor in which meat has been boiled can be made into soup with the addition of the above vegetables.

Rich Pea Soup.—Put to soak in cold water 1 pint of split peas and 1 teacupful of green peas. Stand overnight. Have threepennyworth of juicy uncooked beef bones, and also ham bone if possible; break them up well, allow 1½ pints of cold water to every pound of bone, add a little salt, and simmer gently for 4 hours. Then strain, and put to stand till next day. Take off any fat which has set; put stock into saucepan with the soaked split peas; boil till they are soft, adding 2 single pieces of celery to flavour. Take off the fire and pour through sieve into a clean dish, working the peas through with a wooden spoon. Return to saucepan, add the green peas and boil about ½ hour longer or until the latter are tender. Serve with fried bread.

Irish Stew.—1½ lbs. neck of mutton, 2 large onions, ½ teacupful of green peas (previously soaked), 1 carrot cut in small pieces, 3 lbs. potatoes, water, pepper, and salt. To prepare, cut the meat into small pieces, wash and peel the potatoes, slice thickly, peel and slice the onions; put a layer of meat at bottom of saucepan, then a layer of vegetables, add seasoning, repeat layers till all is used up, add sufficient water to nearly cover all. Cover closely and stew gently for 2 hours.

Hot-pot.—A good hot-pot can be made from the meat of a cooked joint. Break the bone up small, put in the bottom of a stew dish, put a layer of sliced potatoes, then add a layer of meat cut small, with seasoning of salt and pepper and sliced onion. Repeat till dish is full. Then add any gravy at hand, fill up to about 2 inches off the top with cold water, cover with plate, and set in hot oven to cook till potatoes are quite soft. After cooking about 1 hour, it should be taken from the oven and well stirred in order to get the whole well mixed. Remove the plate about ½ hour before serving to allow the top to brown nicely.

Roast Meat on Potatoes.—Get a joint of beef, mutton, or pork, weighing 2 or 3 lbs. Peel and slice thinly as many potatoes as will fill the roasting-tin, sprinkle with salt, and add water to within about 1 inch

from top, place the meat on the middle of the potatoes, and bake in quick oven. Remove the joint when sufficiently cooked, replace the potatoes in oven to get browned.

Stewed Shin of Beef.—4 lbs. shin beef cut in fairly thick slices, dust it lightly with flour; put it in a stew pan with a good lump of dripping, and shake briskly over a good heat till the meat browns; do this quickly so as not to harden the meat. Then add cold water, about 1 pint, a peeled onion, 2 cloves, pepper and salt. Simmer slowly for 3 hours. Meanwhile cut up into dice one cupful each of onion, carrot and turnip (if time allows just fry vegetables lightly, it improves the flavour), add these to the stew about 1 hour before serving, and let simmer rather quickly.

Stewed Oxtail.—Take 1 oxtail, cut into joints, and put into a saucepan with 4 quarts of cold water, 1 dessert-spoonful of salt, and 1 pennyworth of pot-herbs. Let all simmer together for 3 or 4 hours, then thicken with 2 tablespoonfuls of oatmeal blended in half a basinful of cold water. Stir this well into the pan and let it come to the boil, then let it simmer ½ hour and it is ready.

Stewed Beef Skirt.—Take 1½ lbs. of beef-skirt cut into small pieces, put into stewpan with 1 small onion sliced, ½ carrot cut small and same quantity of turnip, add pepper and salt, and sufficient cold water to cover meat, stew 2 hours. Blend small lump of butter (½ oz.) in same weight of flour, add to the meat, stirring until all is dissolved and the gravy thickens. This dish can be improved by adding ¼ lb. of beef kidney cut into small pieces.

Cowheel and Tripe.—Take 1 cowheel, soak over night, and wash well in clean cold water; ½ lb. tripe cut small, put into large saucepan, slice in 1 onion, pour over 2 quarts water, put on to boil 2 hours, or until meat slips from bone. Then mix 1½ tablespoonfuls of flour with ½ gill of milk until quite free from lumps, and stir this into the pan, season all with salt and pepper, and let simmer well until nicely thickened.

Cornish Pasties.—¼ lb. mutton, ½ lb. potatoes, 1 small onion, salt and pepper, pastry. Cut the meat and potatoes into small pieces, mince the onion finely, add seasoning, and mix all well together on a plate. Roll out some pastry into rounds, put a tablespoonful of the mixture on to each, wet the edges and draw them together and press. Lay on a greased tin and bake in a quick oven about ½ hour.

Savoury Hash.—1 lb. cold meat, 1 oz. dripping, 1 teaspoonful of mixed herbs, 1 onion, 1 dessert-spoonful of flour, ¼ pint of gravy or water, salt and pepper to taste. Remove all meat from bones, cut into small pieces; break up the bones and put them into a pan with cold water; let boil one or two hours; strain, add salt and pepper. Heat the dripping, slice the onion, and fry to a nice brown in the dripping; sprinkle in the flour and herbs, stir in the stock by degrees, let boil a few minutes, allow it to cool a little, then put in the meat and make thoroughly hot but on no account allow it to boil.

Good Meat Pie.—Take 1 lb. beef-skirt, cut into small pieces, lay in a dish with a little salt and pepper, cover with water, and stew gently in the oven until quite tender. Take from it any pieces of skin, and put the meat and gravy into a pie-dish, sprinkle lightly with flour, and put over all a good crust of pastry, and bake quickly until nicely browned. For pastry rub 2 ozs. of dripping into 6 ozs. of flour, add a pinch of salt, ½ teaspoonful of baking powder, and sufficient water to make into stiff dough. ["Chuck steak" may replace beef-skirt.]

Liver and Bacon (Savoury).—Take 1 lb. liver and ½ lb. fat bacon. Cut both into nice slices, lay liver in a dripping tin, sprinkle over a seasoning of sage, chopped onion, pepper and salt; dredge with flour, lay bacon on top, and just enough water to cover the liver. Put into a moderate oven, and bake ½ hour to 1 hour.

Stock for Soup from Scraps.—Bones should never be thrown away. If broken up, put into cold water, and cooked slowly, they will make good stock for any soup. Bacon rind, scraps of meat (cooked or uncooked), crusts of bread, etc., all help to make stock better and save waste. To each pound of bones, etc., allow 1 to 2 quarts of water. Put in a little salt, which will raise the scum to the top; this must be removed as it rises. Let it simmer 2 hours, then strain and it is ready for use. [4 lb. lean flank of beef can be used in many ways for large family.]

Bread Pudding.—Take top and bottom crusts off a 4 lb. loaf and cover with boiling water; allow to soak for one hour, then break up fine with a fork, add ½ pint of milk, ½ lb. raisins, 2 ozs. shredded suet, pinch of salt and pudding spice to taste, and piece of candied peel finely chopped. If required richer add 1 egg. Bake in oven for ½ hour. This will make a pudding for a family of six. Another pudding may be prepared without milk or egg by using beef dripping instead of suet. Take twopennyworth of beef fat, cut it up, and render it in the oven. Add it to crusts soaked as before, and beat up with fork. Add 1 lb. of currants, and 2 tablespoonfuls of moist sugar. Bake ¾ hour in hot oven.

Whole Wheat Meal contains more flesh and bone, brain and nerve-forming materials than fine white flour. When ground to a uniform very fine quality it can be easily assimilated.

Parkin.—Take 1 lb. fine oatmeal, ½ lb. brown sugar, 6 ozs. dripping, 1 teaspoonful grated ginger, ½ lb. flour, ½ lb. syrup or treacle, 1 teaspoonful baking powder, 1 teaspoonful of carraway seeds, about a teacupful of milk or water. Melt the dripping and syrup together; mix all the dry ingredients together in a bowl, and add syrup, dripping, and milk. Mix all well together, pour into greased dripping tin, and bake in rather cool oven 1½ hours.

Extract of Malt—home-made.

Take 4 lbs. of malt, ½ lb. of crushed wheat, and ½ lb. of crushed oats, add 4 quarts of hot water (not boiling), let it stand 24 hours, sieve and squeeze it. To every pint of liquor add 1 lb. of raw sugar, let it simmer in a brass or enamel pan until it thickens. Half the above may be made at once. A dessert-spoonful may be taken 3 or 4 times a day.

ACCIDENTS AND EMERGENCIES.

Bleeding.—This is the result of any injury to a blood vessel. It can usually be stopped by simple pressure with a pad of linen and tight bandage. Until this can be obtained, local pressure with the finger may prove sufficient. The blood vessels are naturally closed with a clot. Therefore keep the parts at rest, and do not remove the clot by washing.

Nose-bleeding.—Sniff up the nose a solution of alum in iced water, do not let the patient bend over a basin; prevent frequent blowing and wiping of the nose. Recurring bleeding of the nose may mean the presence of disease which can be detected and easily cured.

Bruise.—Apply pressure with a handkerchief soaked in cold water.

Sprain.—It is advisable to make quite certain first of all that there is no fracture or dislocation. There is painful swelling, but no break or displacement of bone. The pain is eased by bathing the part with hot water, and then applying firm pressure with wadding and bandage.

Fracture.—A common form amongst children is what is called a "greenstick fracture"—the bone bends and splinters but is not broken right across. A broken collar bone is a common result of a fall, and injuries to the elbow are not uncommon as a result of swinging children by the hands. Fix the broken bone with some improvised splint and bandage, and take care to handle the parts with great care lest a "simple fracture" be converted into a "compound fracture," as sometimes happens by the fragments of bone injuring the skin, if not actually projecting through it. "Setting" the fracture, or fixing the bones in position, is the doctor's work.

Dislocation.—There is constant and increasing pain. The joint is deformed, and the bones look as if they are out of place. The child is unable to move the part, and movement is deficient where it should naturally be present, *cp.*, fracture. Support the part by splint, bandage, or sling. "Reduction," or replacing the bone, is the doctor's work.

Bites of insects and animals are best treated by carbolic acid lotion—one teaspoonful to a pint of water. Dab, and cover with clean rag soaked in the lotion. "Mad dogs are about the scarcest things on earth."

Removal of Foreign Bodies.

As a result of some accident or mishap, substance (foreign bodies) may gain entrance to various parts of the body such as the throat, etc.

Throat.—A lump of food, a coin, a piece of bone, or an orange pip may stick in the throat and cause alarming symptoms of choking and suffocation. Pass the forefinger down the throat as far as possible, and try to hook it out with the finger. If vomiting is excited this will do good. May be a sudden slap on the back is effectual, or holding the child up by the heels with the head downwards, and then smacking the back, may cause the substance to be ejected.

Stomach.—If the child swallows a pin or plum-stone, etc., give dry meals with plenty of bread, potatoes, and oatmeal porridge for a few meals until it is believed the body has been passed. Do **not** give aperient medicines lest perforation of the bowels results.

Foreign bodies in the **eye, ear,** or **nose** may cause serious trouble in a short time, or be a focus of disease at a time more or less remote,

so that it is better to seek medical advice without delay if there is any doubt that the body has not been dislodged. Similarly, thorns or needles piercing the **skin** had better be removed at once, as their ultimate removal may become a much more serious matter.

Fainting.

Caused by a sudden feebleness of the heart's action, and is accompanied by a pale face, sometimes a cold sweat, and an absent or very feeble pulse. Put the head as low as possible by laying the child full length on the floor, or by bending the head and body forwards until the head is below the knees as if tying one's shoe-laces. Provide plenty of fresh air, apply *carefully* smelling salts to the nostrils, sprinkle the face with cold water, and give sips of brandy (or sal volatile) and hot water or of plain cold water.

Epilepsy.

In the typical fit the sufferer first screams, and then falls down unconscious and rigid. The hands are clenched, the legs and arms jerked to and fro, the face becomes purple, foam often escapes from the mouth, the tongue may get bitten, and urine, etc., be passed unconsciously. Bed-wetting is sometimes the result of nocturnal epilepsy. When the fit passes off the patient lies helpless and unconscious for a time as if in a deep sleep, and feels much confused on waking up. The treatment is to loosen all constrictions about the neck and chest; to prevent the patient from injuring himself by placing him on the floor or on a mattress, and by placing a piece of wood between the teeth to prevent the tongue being bitten. Do **not** try to restrain the movements, or to give stimulants, or to throw cold water on the face,—simply allow the patient to go to sleep, and to recover naturally. Remember that the commonest causes of death during a fit are either falling on the fire or getting suffocated during sleep.

Much milder forms of epilepsy are common. The child does not twitch or jerk convulsively, but suddenly turns pale, fixes its eye, and becomes unconscious for a few seconds. On recovery the child is liable to eccentric behaviour or even to acts of violence. These mild fits may be the forerunner of true epilepsy in its most severe and explosive form.

Convulsions.

Convulsions after three years of age are probably epileptic, before this age they are more likely to be due to causes like teething, stomach derangement, commencing fever, or inflammation of brain or other part, *e.g.*, ear. Until the doctor arrives place the child in a hot bath containing a small handful of mustard. Test the heat of the water by plunging into it the arm up to the elbow. Fatal **scalds** have resulted from having the water too hot. Apply ice or cold clothes to the head. Send for medical help without delay. Remember that repeated convulsions may cause, or be the result of, a state of mental deficiency. Every care should, therefore, be taken to prevent recurrence.

Hysterical Fit.

The patient screams, laughs, cries, kicks, or exhibits jerky movements of the limbs which are not really convulsions. The best treatment is to exclude all fussy friends and let her alone. Do not show any sympathy.

HOW TO GUARD AGAINST LAMP ACCIDENTS.

The use of Petroleum Oil (or Paraffin) in lamps becomes dangerous if certain precautions are not observed, and many deaths have resulted from neglect of these precautions.

Fatal accidents have resulted from :—

(1) **The use of** common and unsteady **lamps, which are easily upset.**

(2) **Explosions** resulting from the vapours given off from the oil catching alight, and thus setting light to the oil. Some oils give off vapours which catch alight more readily than others, and these are said to possess "a low-flash point." Oils with a **flash-point of 100° F.** should be purchased in preference to those with a lower flash-point—for the vapours given off by the former are far less liable to catch alight and cause an explosion.

To guard against accidents from upsetting the lamp :—

(1) The reservoir for the oil should be thick and strong, and made of metal, and not of thin glass or china—otherwise if it upsets, or the oil catches alight in the reservoir, the reservoir breaks and the burning oil escapes.

(2) The burner should be strong and securely attached to the reservoir by screwing tightly into the collar, and the collar should be securely fixed to the body of the lamp.

(3) The lamp should have a broad, solid and heavy base, so that it is not easily upset.

To guard against explosions and the oil in the reservoir from getting lighted :—

(1) The wick should quite fill the wick-tube without having to be squeezed into it; this serves to protect the contents of the reservoir from the flame.

(2) Always see that the reservoir is well filled with oil before the lamp is lighted.

(3) The burner should be kept thoroughly clean, and all spilled oil should be wiped off the outside of the lamp before lighting.

(4) When first lighted the wick should be partially turned down, and then gradually raised.

(5) The wick while alight should not be left turned down, as there is then greater liability to explosion when low-flash oil is used.

(6) Do not use cracked chimneys; they have led to accidents.

(7) Lamps with no extinguishing apparatus should be put out as follows: The wick should be turned down until there is only a small flickering flame, and a flat piece of metal should then be placed on the top of the chimney, so as to entirely close it. **Never blow down a chimney.**

(8) The cans or bottles used for oil should be kept tightly corked and well away from any artificial light.

(9) On no account should a lamp be refilled while the wick is burning.

(10) In a new lamp always see that the flame is quite clear of the metal part of the burner, otherwise the heated metal may lead to an explosion.

If the oil in the body of the lamp takes fire a sharp puff of the breath will generally put it out; failing this, and the lamp is not broken, take a cloth, blanket, towel, or some similar material, and tightly wrap up the top of the lamp so as to smother the flames, but be careful not to upset the lamp while doing this.

N.B.—It is a wise precaution to stand small bedroom lamps in the wash-hand basin. *(Dr. Kenwood, Medical Officer of Health for Stoke Newington, N.)*

Death by Burning—A Warning.

Small children should never be left alone in a room with an unprotected fire. **Beware** of flannelette; **provide** a fireguard. The risk of danger is very great. Children are often fond of playing with fire, and have no idea of the risks they run.

Burns and scalds sometimes lead to permanent **disfigurement.** Death by **burning is torture** and agony.

During the year 1904 there were 2,209 children **burnt to death** in England and Wales. Most of these children would not have lost their lives had a fireguard been provided. A **fireguard** is an **inexpensive** article. It is the duty of parents to protect their children.

It is the duty of the National Society for the Prevention of Cruelty to Children to deal with parents who fail to do this.

First Aid.—Suppose your dress or that of your child catches fire, what are you to do? Crush it out at once; lay the child on the floor, and wrap her round with the hearthrug, tablecloth, or anything handy which will exclude all air and extinguish the flame. Then remove clothing as gently and carefully as possible; do not pull off roughly lest skin comes with clothes; rather cut them round with a sharp pair of scissors and leave to the doctor. Soak pieces of clean old linen or soft rag in oil (olive, linseed, etc.), or smear them thickly with vaseline (or *fresh* lard), and put them over the burnt (or scalded) portions as speedily as possible, securing them by wadding and bandage, handkerchief, or anything handy. Remember that the object is to keep the air from the injured part, and to protect it from further injury. To relieve the severe pain of a simple burn or scald apply a saturated solution of bicarbonate of soda to the unbroken skin.

Burns or scalds, according to their extent and position, often cause serious *shock* to the system, and the patient may be cold, collapsed, pulseless, and restless. A hot bottle should be placed in the bed, and an extra blanket on the bed, and varying amounts of hot water and brandy given according to age of patient. Later the wounds will inflame, and require careful surgical treatment if complications wish to be avoided, and if the best results are to be obtained in the quickest time. Mothers should note that a mixture of zinc and boric ointments from the chemist is worth all the fancy and expensive greases advertised to make fortunes for their manufacturers!

Cuts and wounds should be washed in clean water. Apply boric ointment on a clean piece of linen and put on fresh each day.

POISON. The following are a few of the commonest.	SYMPTOMS. The remains of poison in cup, packet, or bottle may guide one as to which poison has been taken.	TREATMENT. Send at once for a Doctor, and always name the poison suspected. Save any remains of poison and all vomited matter.	
I.—Corrosive Acids. *Such as:—* Oxalic Acid Salt of Sorrel or Salt of Lemons Oil of Vitriol (**Sulphuric Acid**) Spirit of Salt (**Hydrochloric Acid**) Aqua Fortis (**Nitric Acid**) Carbolic Acid (**Phenol**)	Staining or white patches and shrivelled appearance of lips, mouth, and throat Pain in stomach, sickness, faintness, purging and straining Severe burning sensation in mouth, gullet, and stomach Intense acrid taste Difficulty in speaking and swallowing	**No Emetics** **Dilute by Diluents** such as Water, Barley Water, Milk, Flour and Water, Eggs beaten up, or Gum and Water, Oil (any Oil except a Mineral Oil) **Destroy the Poison by** one or two tablespoonfuls of Chalk, Magnesia, Whitening, Plaster from Ceiling, Camphorated Chalk or Whitewash pounded and mixed with water. Give freely. (In Carbolic Acid, instead of Chalk, &c., give two or three tablespoonfuls of Epsom Salts dissolved in water; no oil) **Treat collapse** by Strong Tea or Coffee	NO EMETICS.
II.—Corrosive Alkalies. *Such as:—* Washing Soda Caustic Soda Pearlash, Caustic Potash (**Potash**) Spirits of Hartshorn (**Ammonia**) Many Liniments contain Ammonia, and are sometimes taken by accident. Strong Ammonia is sometimes mistaken for Sal Volatile)	Same as above.	**No Emetics** **Dilute by Diluents** such as Water, Barley Water, Milk, Flour and Water, Eggs beaten up, or Gum and Water, Oil (any Oil except a Mineral Oil) **Destroy the Poison by** two or three tablespoonfuls of common Vinegar, Lemon or Orange Juice in water **Treat collapse** by Strong Tea or Coffee	
III.—Irritants. *Such as:—* Tartar Emetic (**Antimony**) Sugar of Lead, Acetate of Lead (**Lead**) Scheele's Green and Rat Poison (**Arsenic** and **Strychnine**) White and Red Precipitate (**Mercury**) Match Heads, Rat Paste (**Phosphorus**) Verdigris and Blue Stone (**Copper**) Poisonous Plants, as Laburnum and False Mushrooms, Bad Fish, &c.	No staining of lips or mouth Pains in stomach and bowels Sickness and faintness Purging and straining The odour of the breath sometimes will assist	**Remove by Emetics.** Tickle the back of the throat with the finger. Give either one tablespoonful of mustard in about half a pint of water, or two tablespoonfuls of common salt *dry*, with only as much water as will enable it to be swallowed, or two tablespoonfuls of Ipecacuanha Wine without adding water. Repeat soon if not sick **Dilute by Diluents** such as large quantities of Water, Barley Water, Milk, Flour and Water, Eggs beaten up, or Gum and Water, Oil—Olive, Salad, Sardine, Linseed, Cod Liver, Castor Oil (any Oil except a Mineral Oil) (No Oils in Phosphorus Poisoning) **Treat collapse** by Strong Tea or Coffee	GIVE EMETICS.
IV.—Narcotics. *Such as:—* Opium, Laudanum, Chloral, Chlorodyne, Morphia, Syrup of Poppies, Alcohol, Paregoric, Children's Elixirs and Carminatives, Teething Powders	No staining of lips or mouth. Profound drowsiness, later insensibility Pupils contracted to the size of a pin's head (not in alcoholic poisoning) Breathing very deep, slow and snoring Face flushed at first, then bluish Skin cold, bluish, and sometimes moist The odour of the breath sometimes will assist	**Remove by Emetics** as above **Keep Awake** Give one teaspoonful of Condy's Fluid in half a tumblerful of water **Artificial Respiration** **Treat collapse** by Strong Tea or Coffee	

Strychnine, one symptom only—violent convulsions. Two things *only* to be done, Emetics and Artificial Respiration. Do not attempt to restrain convulsions.

(By permission of the London County Council.)

NOTES ON NURSING.

In **Rheumatic Fever** perspiration is often excessive, therefore have the patient dressed in flannel, and lying between blankets. In a severe case use a flannel night-shirt split down the front and sleeves, and fastened with tapes. Sponge body daily with warm water (adding a little sanitas) to remove the sweat, and change and dry the night clothes and blankets if they get damp, to prevent discomfort and chill. Do not have heavy bed-clothes, and support these with cradles in severe cases.

Since the joints are very tender do not move the patient unnecessarily, and carry out any necessary movements with the greatest gentleness.

Do not forget the danger of HEART COMPLICATION, therefore keep the patient very quiet, and do not allow him to sit up without the doctor's permission. The patient should be kept on a light, non-meaty diet, but fluid (non-alcoholic) can be given freely with benefit.

In **Heart Disease** careful nursing is an essential. The heart is a pump provided with valves which drives the blood through the lungs and body. When the valves are diseased this mechanism is deranged, and pumping becomes more difficult. The heart, however, is a living pump, *i.e.*, it can, up to a certain degree, make good *in action* for a slight defect in its machinery. The sufferer may be aware that he is not quite strong, but knows that if he exercises care he can get along very comfortably. When the pumping machinery breaks down, *i.e.*, when the damage is so serious (or the work to be done by the heart is so heavy) that Nature's engineer cannot cope with the mechanical difficulties impeding circulation, **compensation fails**, and cough, breathlessness, blueness, dropsy (at first about the ankles), palpitation, etc., appear as signs of a failing heart in a patient suffering from heart disease. The heart is now suffering from overwork; this means rest in bed in the recumbent posture, and medical treatment of the failing heart and water-filling body.

Should the patient suffer from breathlessness when lying down, the nurse can help by propping him up in such a way that the shoulders are supported, and that he does not slip down in bed.

The food should be light and digestible; the principal meal should be taken in the middle of the day; the nurse should remember that any flatulence or constipation may cause palpitation and distress; if the doctor restricts the fluid taken she must be careful to obey his instructions implicitly. **Never** allow a heart case to get constipated.

In **Kidney Disease** (Bright's Disease), the child should wear flannel night and day, and the bedroom be kept warm. Care should be taken to PREVENT CHILL; to relieve the strain of excretion by the weakened kidneys, keep the bowels regular, and the skin active by daily baths.

Whenever **Vomiting** is present, remember that it is not wise to *press* food on the patient. An irritable or inflamed stomach requires rest, not work; a sore eye is protected by a shade; why not shield a sore stomach from unnecessary labour? If there is any pain or flatulence be careful in choice of food, see that it is taken slowly, that it is thoroughly masticated, and that only small quantities are taken at one time. Sometimes "little and seldom" is better than "little and often."

IN CONCLUSION: GENERAL REMARKS.

A **Cough** in a child (as in an adult) is often misleading. Many coughs in children are *not* due to "bronchitis" or "consumption." The majority of coughs are due to some irritation in the throat, such as arise from enlarged tonsils or adenoids, or from a simple catarrh of the throat *(pharyngitis)* the product of nose-block and mouth-breathing. Adenoids are the most common cause of the troublesome night cough which disturbs the child as soon as he lies down. The "stomach cough," and "nervous cough," the cough put down to worms or teething, can generally be explained as above, although some coughs *are* hysterical in nature, and indigestion aggravates, and may be the cause of, a persistent irritating cough which is cured by treatment of the stomach.

The character of the cough varies in different cases: there is the dry tickling cough of throat irritation; the short, dry, hacking cough heard in pneumonia or in the early stages of whooping cough or measles; the paroxysmal, convulsive cough of whooping cough; the croupy cough of catarrh of the larynx or croup; the loose cough of the later stages of bronchitis. In pleurisy there is the cough which is followed by a cry on account of the sharp pain which accompanies it.

It will be evident that the cough mixtures and soothing syrups so extensively advertised by pushful quacks must often be very harmful. "Most of them contain opium and morphine. Time and again I have seen children drugged to the point of stupor by these remedies" (*Kerley*).

Patent Medicines should form no part of the nursery outfit.

Some children are pale and ill-nourished; they suffer from **anæmia.** Do not drug your child with pills and potions; remember that the first step in medical treatment is to discover the **cause** of the disease, and then to remove it if possible. In all cases, however, an abundant supply of fresh air, and particularly of sunlight, is a great aid in restoring the blood to a proper condition. Oat flour, raw meat juice, and yolk of eggs are important iron-containing foods which will benefit your child infinitely more than iron tonics bought haphazard at the chemist's shop.

The mother should note the *predisposing causes* of disease. *Bad hygiene, bad food, starvation, alcoholism, etc.*, lower the resisting power of the body to disease, and so do other illnesses such as influenza, measles, etc. The human body possesses *recuperative power* in varying degrees. This diminishes with age; older people do not recover so quickly and perfectly from illness or injury as in the case of youth. The medical care of the child which demands the mother's attention is to strengthen the defensive arrangements of the child's body against invasion by parasites or germs of disease: the personal side of preventive medicine.

Much more could be said on these matters, and as "showing forth the relations of the infinitely subtle mind of the child to the world he has come awake in, to the world where he will one day fall asleep again, leaving to it his work, evil or good."

Perhaps enough has been written to prove the truth of the assertion that the Service of Man knows no holier ritual than the nurture of the child. "Inasmuch as ye have done it unto the least of these my brethren, ye have done it unto me."

APPENDIX.

BUILDING REGULATIONS FOR PUBLIC ELEMENTARY SCHOOLS

(From the Code of the Board of Education, 1900-1907).

Cloakrooms and Lavatories.

Cloakrooms should not be passages and should be external to the schoolrooms and classrooms, with gangways at least 4 feet wide between the hanging rails, and amply lighted from *the end.* They should not be placed against a gable wall. The hanging-rail should be arranged so that the children can enter and leave the cloakroom without confusion or crowding. Hat-pegs should be 12 inches apart, numbered, and of two tiers. The lineal hanging space necessary to provide a separate peg for each child is thus 6 inches.

Thorough ventilation is essential, so that smells are not carried into the school.

Lavatory basins are needed. Girls' schools require a larger number than boys' or infants'.

A lock-up slop sink, water tap and cupboard are desirable for the caretaker.

Windows and Lighting.

Every part and corner of a school should be well lighted. The light should, as far as possible, *and especially in classrooms,* be admitted from the left side of the scholars. [This rule will be found greatly to influence the planning]. All other windows in classrooms should be regarded as supplementary, or for summer ventilation. Where left light is impossible, right light is next best. Windows full in the eyes of teachers or scholars are not approved. In rooms 14 feet high any space beyond 24 feet from the window wall is insufficiently lighted.

(*a*) Windows should never be provided for the sake merely of external effect. All kinds of glazing which diminish the light and are troublesome to keep clean and in repair should be avoided. A large portion of each window should be made to open for ventilation and for cleaning.

(*b*) The sills of the main lighting windows should be placed about 4 feet above the floor, and the tops of some should reach nearly to the ceiling, with a portion made to swing. The ordinary rules respecting hospitals should here be remembered. *Large spaces between the window heads and the ceiling are productive of foul rooms.*

(*c*) Skylights are objectionable and should never be resorted to where windows are possible. Plans needlessly involving their use cannot be approved, except in the case of central halls having ridge, or apex, ventilation.

Ventilation.

Apart from open windows and doors, there should be provision for copious inlet of fresh air ; also for outlet of foul air at the highest point of the room ; the best way of providing the latter is to build to each room a separate air chimney carried up in the same stack with smoke flues. An outlet should have motive power by heat or exhaust, otherwise it will frequently act as a cold inlet. The principle point in all ventilation is to prevent stagnant air. Particular expedients are only subsidiary to this main direction. Inlets are best placed in corners of rooms farthest from doors and fireplaces, and should be arranged to discharge upwards into the rooms. Gratings in floors should never be provided. Inlets should provide a minimum of

2½ square inches per child, and outlets a minimum of 2 inches. All inlets and outlets should be in communication with the external air. Rooms should, in addition, be flushed with fresh air from windows about every two hours.

A sunny aspect is especially valuable for children, and important in its effects on ventilation and health.

(*a*) Although lighting from the left hand is considered so important, ventilation in summer demands also the provision of a small swing window as far from the lighting as possible, and near the ceiling.

Warming.

The warming should be moderate and evenly distributed so as to maintain a temperature of from 56° to 60°. When a corridor or lobby is warmed, the rooms are more easily dealt with, and are less liable to cold draughts Where schools are wholly warmed by hot water, the principle of direct radiation is recommended. In such cases open grates in addition are useful for extra warming occasionally, and their flues for ventilation always.

(*a*) A common stove, with a pipe through the wall or roof, can under no circumstances be allowed. Stoves are only approved when—

(i) provided with proper chimneys (as in the case of open fires) ;

(ii) of such a pattern that they cannot become red-hot, or otherwise contaminate the air ;

(iii) supplied with fresh air direct from the outside, by a flue of not less than 72 inches superficial, and

(iv) not of such a size or shape as to interfere with the floor-space necessary for teaching purposes.

(*b*) A thermometer should always be kept hung up in a school.

Sanitary Arrangements.

Water-closets within the main school building are not desirable, and are only required for women teachers. All others should be at a short distance and completely disconnected from the school. Privies should be fully 20 feet distant.

(*a*) The doors, staircases and passages leading from the schoolroom to the latrines (whether in mixed or in other schools), and the latrines themselves, must be separate for the two sexes, and constructed entirely apart from each other. In the case of a mixed school this rule especially affects the planning. Where passages or corridors are *unavoidably* used by both sexes, there must be complete supervision from the classrooms by sheets of clear glass.

(*b*) Each closet must be not less in the clear than 2 feet 3 inches wide nor more than 3 feet, *fully lighted and ventilated* and properly screened or supplied with a door. More than one seat is not allowed in any closet.

(*c*) The children must not be obliged to pass in front of the teachers residence in order to reach their latrines.

(*d*) Cesspits and privies should only be used where unavoidable, and should be at a distance of at least 20 feet from the school. Earth or ash-closets of an approved type may be employed in rural districts, but drains for the disposal of slop and surface water are still necessary. The proximity of drinking wells should be carefully avoided.

(*e*) Soil drains must always be laid outside the building (on a hard even bottom of concrete) in straight lines with glazed stoneware pipes, carefully jointed in cement and made absolutely water-tight. A diameter of 4 inches is sufficient unless for drains receiving the discharge of more than 10 closets. Above this number the diameter should be 6 inches. The fall should never be less than 1 in 30 for 4-inch, and 1 in 40 for 6-inch drains. An inspection opening or chamber should be provided at each change of direction so as to facilitate cleansing the drain without

opening the ground. Every soil drain must be disconnected from the main sewer by a properly constructed trap placed on the line of drain between the latrines and public sewer. This trap must be thoroughly ventilated by at least two untrapped openings; one being the 4-inch soil pipe carried up full size above the roof, and the other an inlet pipe connected with the side of the trap farthest from the public sewer. Automatic flushing tanks are desirable where trough-closets are used.

(*f*) Urinals must in all cases have a sufficient supply of water for flushing.

(*g*) Waste pipes from sinks or lavatories should be first trapped inside and then made to discharge direct through an outer wall over a trapped gulley.

Water Supply.

In all schools adequate and wholesome drinking water must be available for the scholars.

In cases where it is not taken from the mains of an Authority or Company authorised to supply water, care must be taken to ascertain that the water proposed to be used is adequate in quantity, is of suitable character, and is not liable to pollution in any way, as, *e.g.*, by surface drainage, or by leakage from sewers, drains, cesspools, or other receptacles.

Where water pipes are used they should be so laid or fixed as to be properly protected from frost, and so that in the event of their becoming unsound the water conveyed in such pipes will not be liable to become fouled, or to escape without observation.

There should be no direct communication between any pipe or cistern from which water is drawn for domestic purposes, and any water closet or urinal.

All water closets and urinals should be provided with proper service cisterns, which together with the outlet therefrom, should be capable of providing a sufficient flush.

Any cistern to be used for the storage of water should be watertight and be properly covered and ventilated, and should be placed in such a position that the interior may be readily inspected and cleaned.

Desks.

Benches and desks, graduated according to the ages of the children, should be provided for all the scholars, and placed at right angles to the light. The benches should be fitted with backs.

An allowance of 18 inches per scholar at each desk and bench will suffice (except in the case of the dual desk), and the length of each group should therefore be some multipule of 18 inches, with gangways of 18 inches between the groups *and at the walls.* A desk for one child needs no gangway next the wall. In the case of the dual desk the usual length is 3 feet 4 inches, and the gangways 1 foot 4 inches.

(*a*) The desk should be *very slightly* inclined. An angle of 15° is sufficient. The objections to the inclined desks are, that pencils, pens, etc., are constantly slipping from it, and that it cannot be conveniently used as a table. The objection to the flat desk is, that it has a tendency to make the children stoop. A raised ledge in front of a desk interferes with the arm in writing.

(*b*) No benches and desks, three rows deep, should be more than 12 feet long, nor, when 4 rows deep, more than 9 feet long, and no group of long desks, in a schoolroom providing for more than 60 children, should contain more than four rows of benches and desks even when the width is more than 21 feet 6 inches, because in proportion as the depth is increased the teacher must raise his voice to a higher pitch; and this becomes exhausting to himself, while at the same time it adds inconveniently to the general noise.

(*c*) Single desks are not necessary in an ordinary public elementary school.

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